

## REMARKS

### **I. Status of the Claims**

Claims 14, 17, 20, and 23-25 were pending at the time of the Action. Claims 14 and 23-25 have been amended. Claims 30-38 have been added. Support for the amended claims can be found throughout the disclosure as originally filed and more particularly at least on page 4, line 26 to page 5, line 7; and from page 5, line 26 to page 6, line 3; page 6, lines 12 – 22; FIG. 2, and the claims as originally filed. Applicants note that FIG. 2 describes various amplification primers that span exons of the SCN1A gene. The specification on page 6 describes primer specific amplification of the SCN1A nucleic acid stating “. . . a pair of primers is designed to specifically amplify a segment of one of the markers [e.g., SCN1A gene]. . . .” SEQ ID NO:1 defines an mRNA or cDNA of the SCN1A that contains the sequence of the processed transcript of the SCN1A gene, *i.e.*, exons with intervening introns removed. The fragments designated by nucleotides 739-867, 3970-4143, and 5521-5747 of SEQ ID NO:1 represent those exon regions amplified by primer pairs defined in FIG. 2, *i.e.*, NaC-63/NaC-64, NaC-143/NaC-144, and NaC-262/NaC-263, respectively. Priming sites for the primers can be found in either exonic or intronic region in the following related SEQ IDs: primers NaC-63 and NaC-64 can be found in SEQ ID NO:9, primers NaC-143 and NaC-144 can be found in SEQ ID NO:25, and primers NaC-262 and NaC-263 sites can be found in SEQ ID NO:32. Therefore, written description for the nucleic acid fragments of claim 14 is present in the application as filed. No new subject matter has been added by the afore mentioned amendments.

Claims 30-38 have been added. Support for new claim 30 is found at least on page 52. Support for new claim 31 is found at least on page 27, line 16. Support for new claims 32 and 36 is found at least in Example 6 and in particular at page 55, lines 14 and 15. Support for new

claims 33 and 37 is found at least in Example 3 and in particular at page 52, lines 7 to 9; and in Figure 3. Support for new claims 34 and 38 is found at least in Example 3 and in particular at page 52, lines 15 to 18; and in Figure 3. Finally, support for claim 35 is found at least at page 4, lines 2-3; lines 19-22; and lines 26-29; at page 27, lines 3-4 and in the corresponding Figure 3; at page 27, line 16, and at page 36 from lines 27-29. No new subject matter has been added.

Claims 14, 17, 20, 23-25, and 30-38 are now pending and in condition for allowance.

## **II. Rejections under 35 U.S.C. §112**

### **A. Claims 14, 17, 20, and 24-25 satisfy the enablement requirement of 35 U.S.C. §112, first paragraph**

Claims 14, 17, 20, and 24-25 are rejected under 35 U.S.C. §112, first paragraph as not complying with the enablement requirement. Applicants have further clarified claim 14 by including the phrase “at least 95% identical to SEQ ID NO:1, wherein the nucleic acid encodes an alpha subunit of an SCN1A sodium channel.” In light of the current claims this rejection is moot.

### **B. Claims 14, 17, 20, and 24-25 satisfy the written description requirement of 35 U.S.C. §112, first paragraph**

Claims 14, 17, 20, and 24-25 have been rejected under 35 U.S.C. §112, first paragraph as failing to comply with the written description requirements. Applicants have further clarified claim 14 by including the phrase “at least 95% identical to SEQ ID NO:1, wherein the nucleic acid encodes an alpha subunit of an SCN1A sodium channel.” In light of the current claims this rejection is moot.

**C. Claim 25 satisfies the written description requirement of 35 U.S.C. §112, first paragraph**

Claim 25 is rejected under 35 U.S.C. §112 as lacking written description for mutations at nucleotides 828, 3978, and 5582. Applicants respectfully traverse.

The genesis of this rejection is merely one of “point of reference.” From the Actions perspective, A565T and the respective mutations at nucleotide 3978 and 5582 are identified using the A of the initiator ATG codon as nucleotide 1. By this convention amino acid 188 would be encoded by a total number of 564 nucleotides ( $188 \times 3 = 564$ ). SEQ ID NO:1 includes an additional 265 nucleotides 5’ of the initiator ATG, thus in relation to SEQ ID NO:1 mutation at A565T is located at nucleotide 828 ( $564 + 265 = 829$  total nucleotides minus one = **828**; since the second nucleotide of codon 188 is mutated: from gAt, encoding aspartic acid to gTt, encoding valine [the D188V mutation “*The A565T substitution correspond to a non-conservative amino acid change (D188V).*” Page 55, lines 14-15]) when using the numbering of SEQ ID NO:1. Typically nucleic acid sequences are presented as there cDNA sequence that includes 5’ non-translated (5’UT) regions that can be represented as negative numbers relative to the initiator codon. However, sequence listing conventions do no allow such numbering leading to the discrepancy identified in the Action. One of skill in the art would readily recognize this discrepancy and identify the A565T mutation at nucleotide position 828 of SEQ ID NO:1. This should also be clear from the enclosed initial copy of the sequences filed with the application (Annex 1), which shows the 5’UT as lower case letters and the coding region as upper case. Further more “Seq Id No:1” (Annex 2), the first sequence described in Annex 1, highlights the initiator ATG and the GAT codon of the 188<sup>th</sup> amino acid. With respect to the nucleotide position 3978 mutation (amino acid position 1238) and the nucleotide position 5582 mutation (amino acid position 1773) the support is easily identified, since for example, it should be clear

to the skilled artisan that the nucleotide sequences which are mutated: GCATTGAAGATATA OR ATCATATCCTTCCTG (Fig. 3 and page 52) are found between positions 3970-3984 (with "C" being at position 3978) and positions 5575-5589 (with "A" being at position 5582) of SEQ ID NO:1; respectively. Applicants respectfully request the withdrawal of the rejection.

### III. CONCLUSION

Applicants believe that the present document is a full and complete response to the Action dated September 18, 2007. The present case is in condition for allowance, and such favorable action is respectfully requested.

The Examiner is encouraged to contact the undersigned Attorney at (512) 536-3167 with any questions, comments or suggestions relating to the referenced patent application.

Respectfully submitted,



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## Annex 1

SEQUENCE LISTING

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Seq. Id. No. 2 (cont'd)

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Seq. Id. No. 4 (cont'd)

Seq. ID No. 5

## a. exon 01 (formerly exon 00)

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Seq. ID No. 6

## b. exon 02 (formerly exon 01)

acatctcttagctctcttaaatatctgtattcctttatttttagGAATTTTCATATGCAGAATAAATGGTAATTAAa  
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Seq. ID No. 7

## c. exon 03 (formerly exon 02)

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Seq. ID No. 8

## d. exon 04 (formerly exon 03)

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Seq. in no: 9

## e. exon 05 (formerly exon 04)

gctaaatagatttcatacttctgatttctcacactactcttaagacactttacgaacaactctttgtgtaggaagc  
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Seq. in no: 10

## f. exon 06N (formerly exon 05N)

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 tacagcttttcttctgctctgttttgtgtgtgtgaactcccgttacag

//

## g. exon 06A (formerly exon 05A)

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12

## h. exon 07 (formerly exon 06)

cacgcgtgcttagccctcatagtaatagcctcctaccttcagGCCTGAAAACCATTTGTGGGAGCCCTGATCCA  
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 TGAATTATAATGGTACACTTATAAATGAACTGTCTTTGAGTTTGACTGGAAGTCAT  
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13

## i. exon 08 (formerly exon 07)

cgcgcaaatactgtgctttgaaatgaataatatatttaaaattactcaataaacttaaaagtagaacctgaccttcctg  
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Seq. ID NO: 14

## j. exon 09 (formerly exon 08)

aggtgtgaaaatgcaaatatcaacaaaaattttgtaaaattattagaaatgctgcaccatatttaatgatga  
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## k. exon 10 (formerly exon 09)

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## l. exon 11 (formerly exon 10a)

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Seq. id. no. 17

m. exon 12 (formerly exon 10b)

cattgccatattctaaggatgttcccttgaacttgagaaatggctcagggtgtgtgtatgtgtgtgtgtgtgt  
 gtttcaatatgttaagggtgcaatctatctcctcattcttaatcccaagggtagaaactttttatcaaggtaatt  
 taatttaatgtgaatgcacataaaatgagaatgataatcaaaaggaatgaaccataattctgttatgaatgctgaaatctc  
 ctctacataatcttgcaaaatgaaatcacattcaaatgtccatattaatgactctatttgbtgctcttcaaact  
 ctatTCTTTGTTGAGCATCCGTGGCTCCCTATTTTACCAAGGCGAAATAGCAGAACAA  
 GCCTTTTCAGCTTTAGAGGGCGAGCAAAGGATGTGGGATCTGAGAACGACTTCGCA  
 GATGATGAGCACAGCACCTTTGAGGATAACGAGAGCCGTAGAGATTCTTGTGTTGTG  
 CCCCAGACGACACGGAGAGAGACGCAACAGCAACCTGAGTCAGACCAGTAGGTCATC  
 CCGGATGCTGGCAGTGTTCAGCGAATGGGAAGATGCACAGCACTGTGGATTGCA  
 ATGGTGTGGGTTCCCTTGGTTGGTGGACCTTCAGTTCCTACATCGCCTGTTGGACAGCT  
 TCTGCCAGAGGTGATAATAGATAAGCCAGCTACTGATGACAAATgtaaggaagtytaa  
 atagttcaggcatggctggctcactattgtgtgcaccagccagtggtctacagaacggcaacctgagaatgattcctgg  
 ttggtcacgctgtgaatgcacctgtcatcttgaatatctttgatagactaaccaactaaaacttaaaccttagcagtcg  
 cctgcacaaacctgaatgcatttacttataaaagtgtgaaggattgattagacacaataattactgcctccagttggag  
 gattt

Seq. id. no. 18

n. exon 13 (formerly exon 10c)

aagagtttatcaactatataaaattttgtattttataaaattatgaaatcaggaagttaacatcttggttttgc  
 tglatgactaaatggtaacagttgaacattccaggctaatgatacaataagtcagaaatatctgccatcaccattga  
 atatgaaagtgcgatgcatgtgttcatgaaattcactgtgtcaccatttgggtgttggctgtcatattgctcaaat  
 taattgttaatgcattagcatttttttacagGGAACAACCACTGAAACTGAAATGAGAAAGAGAAGGTC  
 AAGTTCCTTCCACGTTTCCATGGACTTTCTAGAAGATCCTTCCCAAAGGCAACGAGC  
 AATGAGTATAGCCAGCATTCTAACAAATACAGTAGAAGgttgtaacaaattctatttctgtttcaattattt  
 tcaccaaacttataattgtctcatttcaacaaatataattgtgagttgggaatagtcatttctaataaaaagacagtctaattcaagagctgttatttc  
 ttatatctactcagatattctagaagccctaacaatttattttaaaatgagtgatattgggactaagactgttttctaactgtgtagcaactctttga  
 a

Seq. id. no. 19

o. exon 14 (formerly exon 11)

gtgaggcggcacatgaagaccacccatttaacctgaggccaagtgtgagccacaatggcagtgcataagacaaaaaac  
 taccattgttacctgggccctatgtgtgtgtctgatgaataaccttgggaggttagagtaaacgtaattttttaa  
 caagtacaaaaaagggtgtctctgtaacaaaaatgtgtgattactgaaaataagtttagtgatgaataaatgtgt  
 gtgtataaagtawaccttttgggtgtcttttttttttcttaacttagAACTTGAAGAATCCAGGCAGAAATGcCC  
 ACCCTGTTGGTATAAATTTTCCAACATATTCTTAATCTGGGACTGTTCTCCATATTGG  
 TTAAGAGTGAAACATGTTGTCAACCTGGTTGTGATGGACCCATTTGTTGACCTGGCC  
 ATCACCATCTGTATTGTCTTAAATACTCTTTTCATGGCCATGGAGCACTATCCAATGA  
 CGGACCATTTCATAATGTGCTTACAGTAGGAACTTGtaagcatattggaaggtaaatgtgttta  
 gtcttcaaatcttctgttgaaaaactgtttacatttaattgtgtatagcagcttttcaaccatccttcatgcttctg  
 cccctgcaaaatcgcaattatatttagctggctatacttactttttgcaaaaaataatcaccttaattgtgtcacaa  
 aaactgagaaaggcataggcctacagcactacttgaagtcacacagcaatatttataattttcaggatccagaagtag  
 ctcatagattaagaacat

Seq. ID NO: 20

p. exon 15 (formerly exon 12)

caagccatttcacccatctgaagacctcagtttcttatctgtaaagtaataattgtatattatctacttcgcgtttcca  
 caaggataaaataataatgtatatgawagctttcatcaactacaaattgccatacaaatagtagtaataagaat  
 cattgtgggaaaatagcataagcattatgttctaagagcaaactctatgcatgtatgtattatctgggtgaattagat  
 taattttgtttgatcttagGTTTTCACTGGGATCTTTACAGCAGAAATGTTTCTGAAAATTATTGC  
 CATGGATCCTTACTATTATTTCCAAGAAGGCTGGAATATCTTTGACGGTTTTATTGTG  
 ACGCTTAGCCTGGTAGAACTTGGACTCGCCAATGTGGAAGGGTTATCTGTTCTCCGT  
 TCATTTGATTGgtaaaaaaaaaaaaaagggaaccaaatcaaaaccttttaaca  
 ttcagggttctgcatagcattgtcatagttttttgcccacacaaccattaggcattgtaagttttctgtaacattgc  
 attgtcaaaaacttttctacatgggaataatttcaattattaggtaccttagttcaagggcwaggtcggaaggtaa  
 cgtt

Seq. ID NO: 21

q. exon 16 (formerly exon 13)

gaattctaagtaccatttciaggttaaagctcaatatataatgcttttaagaatcatacaaatatataatatttca  
 tttccagCTGCGAGATTTCAAGTTGGCAAATCTTGGCCAACGTTAAATATGCTAATAAA  
 GATCATCGGCAATTCCGTGGGGGCTCTGGGAAATTTAACCCTCGTCTTGGCCATCAT  
 CGTCTTCATTTTTGCCGTGGTCGGCATGCAGCTCTTTGGTAAAAGCTACAAAGATTGT  
 GTCTGCAAGATCGCCAGTGATTGTCAACTCCCACGCTGGCACATGAATGACTTCTTC  
 CACTCKHCCTGATTGTGTTCCGCGTGCTGTGTGGGGAGTGGATAGAGACCATGTGG  
 GACTGTATGGAGGTTGCTGGTCAAGCCATGTGCCTTACTGTCTTCATGATGGTCATG  
 GTGATTGGAAACCTAGCGgtatgtaccacttaagatatgcattttgaaata  
 caccagcatggcacatgtatacatatgtaactaacctgcacattgtcacatgtaccctaaaacttaagtataataaaa  
 aaaaagagtataatggtgactgtttgtcaaaaagaaaaacaaactatgattatggtttaaagtccattacct  
 tggatatattacactttaacaacacagcaatatabcagtgcccctgcatttttatac aaattctattttgicagta  
 ctttatcacatttttatgtgaattacaatagagtatcatattgagatgagcctaaaaggatgtgctgggaccatttat  
 aaattcagagccaaggaagagagaagct

22

r. exon 17 (formerly exon 14)

gaattctcgtattgtacacataaaatctgttttcttactacatacaatttagagttacaaaaccttagattagctc  
 attcaatttcactttacgaatgggagaacttgagagcaacagaaatcatgtctttgtccaaggatgtgctattgagccag  
 tcacaaattcagatcacccatcttctaatacactatgctgtggttttcttctcatcaagttttagaacttagagtttt  
 tccacacttaaaagaaagaataagtgattgtaatctgctctccctacattgggtgtaaaatataatcatgtttttgtg  
 ttttaagGTCCTGAATCTCTTTCTGGCCTTGCTTCTGAGCTCATTTAGTGCAGACAACCTT  
 GCAGCCACTGATGATGATAATGAAATGAATAATCTCCAAATTGCTGTGGATAGGATG  
 CACAAAGGAGTAGCTTATGTGAAAAGAAAAATATATGARTTTATTCAACAGTCCTTC  
 ATTAGGAAACAAAAGATTTTAGATGAAATTAACCCTTGATGATCTAAACAACAA  
 GAAAGACAGTTGTATGTCCAATCATAACAGCAGAAATTGGGAAAGATCTTGACTATCT  
 TAAAGATGTAAATGGAACACAAAGTGGTATAGGAACTGGCAGCAGTGTGAAAAAT  
 ACATTATTGATGAAAGTGATTACATGTCATTCATAAACAACCCAGTCTTACTGT  
 GACTGTACCAATTGCTGTAGGAGAATCTGACTTTGAaAATTTAaACACGGAAGACTTT  
 AGTAGTGAATCGGATCTGGAAGaAGCAAAGAGgtaagattctataggtgtgggtaggtatgaatacatata  
 atatatacatatacacatacagatgaycctcagcttaatgatgttttacttaaga

Seq. Id. No. 23

s. exon 18 (formerly exon 15)

aagcttacattgtgaattatggtaaaagggtagcacagacaatgattttctattttcccttattcaatctctt  
 ttctctaaaaatatctctacctaagaagaataaaaaacaattcatagtaataatccttcttggcaggcaacttatta  
 ccaaaattaaggactttactttctatgtccatctcacttacagAAACTGAATGAAAGCAGTAGCTCATCAGAAGG  
 TAGCACTGTGGACATCGGCGCACCTGTAGAAGAACAGCCCCGTAGTGGAACCTGAAG  
 AAACTCTTGAAcccgAAGCTTGTTCCTGAAGgtaaagaaaagaatcctaattgtaaatctttcatttgagtgca  
 gcttatttagctgttggcagctaanaataatcacatataataaaatngcatttgaatagatataattcaatcacctctaataatntgacagacaa  
 aaaaacttaagctagtgcatgctttgattatctgcccataatntgg

t. exon 19 (formerly exon 16)

ccatttaaatgtggctgaatgtttccacaacttcacacagctgatgaatgtgctcttactactctaggcttagagagcta  
 tgctagcaagacagagatgagcatagtaataaaaagacaagacaaggacattgctaaaggatattatggaagcagagaca  
 cttaactacttttatttcaacactttctgcagGCTGTGTACAAAGATTCAAGTGTGTCAAATCAATGTGG  
 AAGAAGGCAGAGGAAAACAATGGTGGAACCTGAGAAGGACGTGTTTCCGAATAGTT  
 GAACATAACTGGTTTGAGACCTTCATTGTTTTCATGATTCTCCTTAGTAGTGGTGCTC  
 TGgtgagtgagattaagaaaaggtagacagcactaattttagaacactctaactgatgacttattaatccttgtttcattgtcttagtatcca  
 atgcatttttaattatcccactgtatcttctatagatttactctataactctataatttctggattaacttttactatgtatgtaaatataaatttaagaagc  
 taatcattaattttgcttactattaaatagcccagaaagtgtagccctcagcttattcattaacaccaaaaggatgtgaatattcaattac

u. exon 20 (formerly exon 17)

ccacatcaggatacaacatcaagaactatttcctgactaagtcaaattaattcattggaatcatacttttcttttcttc  
 caccaatagctttccctgattaataaagtaaaagacctttgcgaggaaaaaaaagtaacagtaactactgtttct  
 ctgcccctctattccaatgaaatgcatatgcatatgattaatttttaaatagcttatggagtataattatttttgaaa  
 gctaataatgtgaacattttctttatagGCATTTGAAGATATATATATTGAYCAGCGAAAGACGATTA  
 AGACGATGTTGGAATATGCTGACAAGGTTTTCCTTACATTTTTCATTCTGGAAATGCT  
 TCTAAAATGGGTGGCATATGGCTATCAAACATATTTTACCAATGCCTGGAGTTGGCT  
 GGACTTCTTAATTGTTGATgtaggtatcgttcataattttgtctctgttcaaggtagcttgccttatttatattcaaaattctacaatag  
 tgagtctcagaccactatgttatgttgacagactataatarccactaaacgcatatatgcaatgagagtgctatttctggaagacaagggctaa

v. exon 21 (formerly exon 18)

aaaaattatacttgcgtattatagcaactacacattgaatgatgattctgtttattaattgttattattcytgtgtg  
 tgcagGTTTCATTGGTCAGTTTAACAGCAAATGCCTTGGGTTACTCAGAACTTGGAGCC  
 TATCAaTCTCTCAGGACACTAAGAGCTCTGAGACCTCTAAGAGCCTTATCTCGATTG  
 AAGGGATGAGGgtaagaaaaatgaaagaacctgaagtattgtatatagccaaaattaaactaaatttaaaaaaggaaaa  
 atgtatgcagcaaaaggatggcaaatcttgcaaaatgccttattgttt

Seq. Id. No. 27

## w. exon 22 (formerly exon 19)

cttggttatattgcctatagttgtttcctaagtgtattgcttaagaaaaaaaaatgaatttaagatttttgaacct  
 tgcctttacatatcctagaataaatagcattgatagaaaaaagaatggaaagaccagagattactaggggaatttttt  
 tctttattaacagataagaattctgacttttctttttccattgtgtattagGTGGTTGTGAATGCCCTTTTAGGAGC  
 AATTCCATCCATCATGAATGTGCTTCTGGTTTGTCTTATATTCTGGCTAATTTTCAGC  
 ATCATGGGCGTAAATTTGTTTGCTGGCAAATTCTACCACTGTATTAACACCACAACCT  
 GGTGACAGGTTTGACATCGAAGACGTGAATAATCATACTGATTGCCTAAAACTAATA  
 GAAAGAAATGAGACTGCTCGATGGAAAAATGTGAAAGTAACTTTGATAATGTAGG  
 ATTTGGGTATCTCTCTTTGCTTCAAGTTgtaagtgaacactattttctgaatattttattgtttggaataatacaaaa  
 ataatgacatacatctattattagttcctaagaaaaagtatatatttcttattttaaaaaattcaattgttagtacaagttatga  
 gcccatgagggtgaaaactttattacatgtaaggact

28

## x. exon 23 (formerly exon 20)

aatggccattttgtcaatatgtgtctagaatgaaaagccatactaaaatactgtcttggtccaaaatctgtgtaaaa  
 ttgttttgaatgtctttcaaaaatattccctttgaaaattatcagtaagaattttattaaacatcagggtctaaa  
 ttattttactccaaagtaaacatgcatgtccttcttaatagGCCACATTCAAAGGATGGATGGATATAATGTA  
 TGCAGCAGTTGATTCCAGAAATgtaagtattcctgtattctaagctttttacaattatgacaggtggtaaaattaatcgaa  
 taaagcataaacgaccaaatgaaatgattctatcttgatttaaaatattgggaaaaagtgtagcaggtaaatattcaagc  
 atagcaatgtttatcagaaagatcttactaagataattcaacacatgaattattttg

29

## y. exon 24 (formerly exon 21)

cagaaaaaaaaaaatgctgacatattagtaagaataattttntctattgttatgaaaaagcaccagtgacgatttccag  
 cactaaaatgtatggtaaatattttacaaaatattccctttgtagGTGGAACCTCCAGCCTAAGTATGAAGAAAGT  
 CTGTACATGTATCTTTACTTTGTTATTTTCATCATCTTTGGGTCTTCTTCACCTTGAA  
 CCTGTTTATTGGTGTGCATCATAGATAATTTCAACCAGCAGAAAAAGAAGataagttatttctaat  
 attttctctccactgagatagaaaaattattccttgagtggtttctctgccaatgagtacttgaatttagaacaatgggagtatatattataactg

30

## z. exon 25 (formerly exon 22)

gcattttgaattatttagggaattaaaaatattatcacacctaagagtacaattttttacatttttaaatcccagata  
 taattataactaatcagttgaattttgtatttcttttttagccatccattttctattttaacattgaaaaaatgtacaaa  
 aggacacagtttaaccagtttgatttttctttctatacTTTGGAGGTCAAGACATCTTTATGACAGAAGAACA  
 GAAGAAATACTATAATGCAATGAAAAAATTAGGATCGAAAAAACCGCAAAAGCCTA  
 TACCTCGACCAGGAgtaagaagtatcaaatgatatgggggaaatacaaaaacaaaactgcatgcttctcacaaaaaaga  
 aaagtaagctaacaattt



Seq. ID No. 31

aa. exon 26 (formerly exon 23)

tttaacaattaattatgctataaattcattctacaaaaatcatttggatgactcttgcaagaaactagaaagtca  
 attaatgcagaaagtlacttaattgctaattgcacatgagaaaaactccttgggttaaagcatttctatttctctacagA  
 ACAAATTTCAAGGAATGGTCTTTGACTTCGTAACCAGACAAGTTTTTGACATAAGCA  
 TCATGATTCTCATCTGTCTTAACATGGTCACAATGATGGTGGAAACAGATGACCAGA  
 GTGAATATGTGACTACCATTTTTGTACGCATCAATCTGGTGTTCATTGTGCTATTTAC  
 TGGAGAGTGTGTACTGAACTCATCTCTCTACGCCATTATTATTTTACCATTGGATGG  
 AATATTTTTGATTTTTGTGGTTGTCATTCTCTCCATTGTAGGtaagaaatatttaaagttcttaaattcagtta  
 aataaaagtgaagctgaacaatcaagattagattcaagatcatcccagcaatcagagataatcactgtaaatat

Seq. ID No. 32

ab. exon 27 (formerly exon 24)

agtatatattatattatagttgtcatatttaataataactgggttcaggactctgaaccttaccttggagctttagaagaaa  
 catatgtttattttaacgcattgatttctcactgggttggtattctcattgtttattcatagGTATGTTTCTTGCCGAGCT  
 GATAGAAAAGTATTTTCGTGTCCCCTACCCTGTTCCGAGTGATCCGTCTTGCTAGGATT  
 GGCCGAATCCTACGTCTGATCAAAGGAGCAAAGGGGATCCGCACGCTGCTCTTTGCT  
 TTGATGATGTCCCTTCCTGCGTTGTTTAACATCGGCCTCCTACTCTTCCTAGTCATGTT  
 CATCTACGCCATCTTTGGGATGTCCAACCTTGCCTATGTTAAGAGGGAAGTTGGGAT  
 CGATGACATGTTCAACTTTGAGACCTTTGGCAACAGCATGATCTGCCTATTCCAAAT  
 TACAACCTCTGCTGGCTGGGATGGATTGCTAGCACCCATTCTCAACAGTAAGCCACC  
 CGACTGTGACCCTAATAAAGTTAACCCCTGGAAGCTCAGTTAAGGGAGACTGTGGG  
 AACCCATCTGTTGGAATTTTCTTTTTTGTGAGTTACATCATCATATCCTTCCTGGTTGT  
 GGTGAACATGTACATCGCGGTCATCCTGGGAGAACTTCAGTGTTGCTACTGAAGAAAG  
 TGCAGAGCCTCTGAGTGAGGATGACTTTGAGATGTTCTATGAGGTTTGGGAGAAGTT  
 TGATCCCGATGCAACTCAGTTCATGGAATTTGAAAAATTATCTCAGTTTGCAGTGCG  
 CTTGAACCGCCTCTCAATCTGCCACAACCAAACTCCAGCTCATTGCCATGGAT  
 TTGCCCATGGTGAGTGGTGACCGGATCCACTGTCTTGATATCTTATTTGCTTTTACAA  
 AGCGGGTTCTAGGAGAGAGTGGAGAGATGGATGCTCTACGAATACAGATGGAAGA  
 GCGATTCTATGGCTTCCAATCCTTCCAAGGTCTCCTATCAGCCAATCACTACTACTTTA  
 AAACGAAAACAAGAGGAAGTATCTGCTGTGATTATTCAGCGTGCTTACAGACGCCA  
 CCTTTTAAAGCGAACTGTAAAACAAGCTTCCTTTACGTACAATAAAAAACAAAATCAA  
 AGGTGGGGCTAATCTTCTTATAAAAAGAAGACATGATAATTGACAGAATAAATGAAA  
 ACTCTATTACAGAAAAAACTGATCTGACCATGTCCACTGCAGCTTGTCCACCTTCCT  
 ATGACCGGGTGACAAAGCCAATTGTGGAAAAACATGAGCAAGAAGGCAAAGATGA

AAAAGCCAAAGGGAAATAAATGAAAATAAATAAAAAATAATTGGGTGACAAATTGTT  
TACAGCCTGTGAAGGTGATGTATTTTTATCAACAGGACTCCTTTAGGAGGTCAATGC  
CAAAGTACTGTTTACACAAATCTCCTTAAGGTCAGTGCCTACAATAAGACAGTG  
ACCCCTTGTGAGCAAACTGTGACTCTGTGTAAAGGGGAGATGACCTTGACAGGAGG  
TTACTGTTCTCACTACCAGCTGACACTGCTGAAGATAAGATGCACAATGGCTAGTCA  
GACTGTAGGGACCAGTTTCAAGGGGTGCAAACCTGTGATTTTGGGGTTGTTTAACAT  
GAAACACTTTAGTGTAGTAATTGTATCCACTGTTTGCATTTCAACTGCCACATTTGTC  
ACATTTTTATGGAATCTGTTAGTGGATTCATCTTTTTGTTAATCCATGTGTTTATTATA  
TGTGACTATTTTTGTAAACGAAGTTTCTGTTGAGAAATAGGCTAAGGACCTCTATAA  
CAGGTATGCCACCTGGGGGGTATGGCAACCACATGGCCCTCCCAGCTACACAAAGT  
CGTGGTTTGCATGAGGGCATGCTGCACTTAGAGATCATGCATGAGAAAAAGTCACA  
AGAAAAACAAATTCTTAAATTTACCATATTTCTGGGAGGGGTAATTGGGTGATAAG  
TGGAGGTGCTTTGTTGATCTTGTTTTGCGAAATCCAGCCCCTAGACCAAGTAGATTA  
TTTGTGGGTAGGCCAGTAAATCTTAGCAGGTGCAAACCTTCATTCAAATGTTTGGAGT  
CATAAATGTTATGTTTCTTTTTGTTGTATTAACCAAAATTTACTCTTTATAAATTT  
CCCCTCACCTCCACCGCCAGAAGACTGAATTGACCAAAATTTACTCTTTATAAATTT  
CTGCTTTTTCTGCACTTTGTTTAGCCATCTTCGGCTCTCAGCAAGGTTGACACTGTA  
TATGTTAATGAAATGCTATTTATTATGTAAATAGTCATTTTACCCTGTGGTGCACGTT  
TGAGCAAACAAATAATGACCTAAGCACAGTATTTATTGCATCAAATATGTACCACAA  
GAAATGTAGAGTGCAAGCTTTACACAGGTAATAAAATGTATTCTGTACCATTTATAG  
ATAGTTTGGATGCTATCAATGCATGTTTATATTACCATGCTGCTGTATCTGGTTTTCTC  
TCACTGCTCAGAATCTCATTTATGAGAAACCATATGTCAGTGGTAAAGTCAAGGAAA  
TTGTTCAACAGATCTCATTTATTTAAGTCATTAAGCAATAGTTTGCAGCACTTTAACA  
GCTTTTTGGTTATTTTTACATTTAAGTGGATAACATATGGTATATAGCCAGACTGTA  
CAGACATGTTTTAAAAAACACACTGCTTAACCTATTAAATATGTGTTTAGAATTTTA  
TAAGCAAATATAAATACTGTAAAAAGTCACTTTATTTTATTTTTCAGCATTATGTACA  
TAAATATGAAGAGGAAATTATCTTCAGGTTGATATCACAATCACTTTTCTTACTTTCT  
GTCCATAGTACTTTTTCATGAAAGAAATTTGCTAAATAAGACATGAAAACAAGACTG  
GGTAGTTGTAGATTTCTGCTTTTTAAATTACATTTGCTAATTTTAGATTATTTACAA  
TTTTAAGGAGCAAAATAGGTTTACGATTCATATCCAAATTATGCTTTGCAATTGGAA  
AAGGGTTTTAAATTTTTATTTATATTTCTGGTAGTACCTGCACTAACTGAATTGAAGGT  
AGTGCTTATGTTATTTTTGTTCTTTTTTCTGACTTCGGTTTATGTTTTCATTTCTTTGG  
AGTAATGCTGCTCTAGATTGTTCTAAATAGAATGTGGGCTTCATAATTTTTTTTTCCA  
CAAAAACAGAGTAGTCAACTTATATAGTCAATTACATCAGGACATTTTGTGTTTCTT  
ACAGAAGCAAACCATAGGCTCCTCTTTTCTTAAACTACTTAGATAAACTGTATTC  
GTGAACTGCATGCTGGAAAATGCTACTATTATGCTAAATAATGCTAACCAACATTTA  
AAATGTGCAAACTAATAAAGATTACATTTTTTATTTTA

ttcttggtgccagcttatcaatcccaaactctgggtgtaaaagattctacagggcactttcttatgcaaggagctaaca  
gtgattaaaggagcaggatgaaaagATGGCACAGTCAGTGCTGGTACCGCCAGGACCTGACAGCTT  
CCGCTTCTTTACCA  
GGGAATCCCTTGCTGCTATTGAACAACGCATTGCAGAAGAGAAAGCTAAGAGACCC  
AAACAGGAACGCAAGGATGAGGAT  
GATGAAAATGGCCCAAAGCCAAACAGTGACTTGGAAGCAGGAAAATCTCTTCCATT  
TATTTATGGAGACATTCTCTCCAGA  
GATGGTGTCAGTGCCCTGGAGGATCTGGACCCCTACTATATCAATAAGAAAACGTT  
TATAGTATTGAATAAAGGGAAAG  
CAATCTCTCGATTCAGTGCCACCCCTGCCCTTTACATTTTAACTCCCTTCAACCCTAT  
TAGAAAATTAGCTATTAAGATT  
TTGGTACATTCTTTATTCAATATGCTCATTATGTGCACGATTCTTACCAACTGTGTAT  
TTATGACCATGAGTAACCCTCC  
AGACTGGACAAAGAATGTGGAGTATACCTTTACAGGAATTTATACTTTTGAATCACT  
TATTAAAATACTTGCAAGGGGCT  
TTTGTTTAGAAGATTTTACATTTTACGGGATCCATGGAATTGGTTGGATTTTACAGT  
CATTACTTTTGCATATGTGACA  
GAGTTTGTGGACCTGGGCAATGTCTCAGCGTTGAGAACATTCAGAGTTCTCCGAGCA  
TTGAAAACAATTTCAAGTCATTCC  
AGGCCTGAAGACCATTGTGGGGGCCCTGATCCAGTCAGTGAAGAAGCTTTCTGATGT  
CATGATCTTGACTGTGTTCTGTC  
TAAGCGTGTTTGCGCTAATAGGATTGCAGTTGTTTCATGGGCAACCTACGAAATAAAT  
GTTTGCAATGGCCTCCAGATAAT  
TCTTCCTTTGAAATAAATATCACTTCCTTCTTTAACAATTCATTGGATGGGAATGGTA  
CTACTTTCAATAGGACAGTGAG  
CATATTTAACTGGGATGAATATATTGAGGATAAAAGTCACTTTTATTTTTTAGAGGG  
GCAAAATGATGCTCTGCTTTGTG  
GCAACAGCTCAGATGCAGGCCAGTGTCTGAAGGATACATCTGTGTGAAGGCTGGT  
AGAAACCCCAACTATGGCTACACG  
AGCTTTGACACCTTTAGTTGGGCCTTTTTGTCCTTATTTTCGTCTCATGACTCAAGACT  
TCTGGGAAAACCTTTATCAACT  
GACACTACGTGCTGCTGGGAAAACGTACATGATATTTTTGTGCTGGTCATTTTCTTG  
GGCTCATTCTATCTAATAAATT  
TGATCTTGGCTGTGGTGGCCATGGCCTATGAGGAACAGAATCAGGCCACATTGGAA  
GAGGCTGAACAGAAGGAAGCTGAA  
TTTCAGCAGATGCTCGAACAGTTGAAAAAGCAACAAGAAGAAGCTCAGGCGGCAGC  
TGCAGCCGCATCTGCTGAATCAAG

AGACTTCAGTGGTGCTGGTGGGATAGGAGTTTTTTCAGAGAGTTCTTCAGTAGCATC  
TAAGTTGAGCTCCAAAAGTGAAA  
AAGAGCTGAAAAACAGAAGAAAGAAAAAGAAACAGAAAGAACAGTCTGGAGAAG  
AAGAGAAAAATGACAGAGTCCTAAAA  
TCGGAATCTGAAGACAGCATAAGAAGAAAAGGTTTCCGTTTTTCCTTGGAAGGAAGT  
AGGCTGACATATGAAAAGAGATT  
TTCTTCTCCACACCAGTCCTTACTGAGCATCCGTGGCTCCCTTTTCTCTCCAAGACGC  
AACAGTAGGGCGAGCCTTTTCA  
GCTTCAGAGGTCGAGCAAAGGACATTGGCTCTGAGAATGACTTTGCTGATGATGAGC  
ACAGCACCTTTGAGGACAATGAC  
AGCCGAAGAGACTCTCTGTTTCGTGCCGCACAGACATGGAGAACGGCGCCACAGCAA  
TGTCAGCCAGGCCAGCCGTGCCTC  
CAGGGTGCTCCCCATCCTGCCCATGAATGGGAAGATGCATAGCGCTGTGGACTGCA  
ATGGTGTGGTCTCCCTGGTCGGGG  
GCCCTTCTACCTTCACATCTGCTGGGCAGCTCCTACCAGAGGGCACAACCTACTGAAA  
CAGAAATAAGAAAGAGACGGTCC  
AGTTCTTATCATGTTTCCATGGATTTATTGGAAGATCCTACATCAAGGCAAAGAGCA  
ATGAGTATAGCCAGTATTTTGAC  
CAACACCATGGAAGAACTTGAAGAATCCAGACAGAAATGCCCACCATGCTGGTATA  
AATTTGCTAATATGTGTTTGATT  
GGGACTGTTGTAAACCATGGTTAAAGGTGAAACACCTTGTC AACCTGGTTGTAATGG  
ACCCATTTGTTGACCTGGCCATC  
ACCATCTGCATTGTCTTAAATACACTCTTCATGGCTATGGAGCACTATCCCATGACG  
GAGCAGTTCAGCAGTGTACTGTC  
TGTTGGAAACCTGGTCTTCACAGGGATCTTCACAGCAGAAATGTTTCTCAAGATAAT  
TGCCATGGATCCATATTATTACT  
TTCAAGAAGGCTGGAATATTTTTGATGGTTTTATTGTGAGCCTTAGTTTAATGGAACT  
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c c a a t g t t t c c a c c a g t c t t t t a t t c a g t a a t c a t c a g t c t t t c c a a t g t t g t t a c a c a g a t a g a t c t t a t t g a c  
c c a t a t g g c a c t a g a a c t g t a t c a g a t a t a a t a t g g g a t c c c a g c t t t t t c c t c t c c c a a a a c c a g g t a g t g a a g t  
t a t a t t a c c a g t t a c a g c a a a a t a c t t t g t g t t c a c a a g c a c a a t a a a t g l a g a t t c t t a t a c t g a a g c t a t t g a c t  
t g t a g t g t g t g g t g a a t g c a t g c a g g a a g a t g c t g t t a c c a t a a a g a a c g g t a a a c c a c a t t a c a a t c a a g c c a a g a a  
t a a a g g t t c g c t t a t g t a t a t g t a t t t a a

MAQSVLVPPGPDSFRFFTTRESLAAIEQRIAEKAKRPKQERKDEDDENGPKPNSDLEAGK  
SLPFIYGDIPPEMVSVPLED  
LDPYYINKKTFIVLNKGKAISRFSATPALYILTPFNPIRKLAIKILVHSLFNMLIMCTILTNC  
VFMTMSNPPDWTKNVEY  
TFTGIYTFESLIKILARGFCLEDFTFLRDPWNWLDFTVITFAYVTEFVDLGNVSALRTFRV  
LRALKTISVIPGLKTIVGA  
LIQSVKKLSDVMILTVFCLSVFALIGLQLFMGNLRNKCLQWPPDNSSFEINITSSFFNNSLD  
GNGTTFNRTVSIFNWDEYI  
EDKSHFYFLEGQNDALLCGNSSDAGQCPEGYICVKAGRNPNGYTSFDTFSWAFLSLFR  
LMTQDFWENLYQLTLRAAGKT  
YMIFFVLVIFLGSFYLINLILAVVAMAYEEQNQATLEEAEQKEAEFQQMLEQLKKQQUEE  
AQAAAAAASAESRDFSGAGGI  
GVFSESSSVASKLSSKSEKELKNRRKKKKQKEQSGEEKNDRVLKSESEDSIRRKGFRRS  
LEGSRLTYEKRFSSPHQSL  
SIRGSLFSPRRNSRASLFSFRGRAKDIGSENDFADEHSTFEDNDSRRDSLFPVPHRHGERR  
HSNVSQASRASRVLPILPM  
NGKMHSAVDCNGVVSLSVGGPSTLTSAGQLLPEGTTTETEIRKRRSSSYHVSMDDLLEDPT  
SRQRAMSIASILTNTMEELEE  
SRQKCPPCWYKFANMCLIWDCCKPWLKVKHLVNLVVMDFVDLAITICIVLNTLFMAM  
EHYPMTEQFSSVLSVGNLVFTG  
IFTAEMFLKIIAMDPYYYFQEGWNIFDGFIVSLSLMELGLANVEGLSVLRSFRLLRVFKLA  
KSWPTLNMLIKIIGNSVGA  
LGNLTLVLAIIVFIFAVVGMQLFGKSYKECVCKISNDCELPRWHMHDFHHSFLIVFRVLC  
GEWIETMWDCMEVAGQTMCL  
TVFMMVMVIGNLVVLNLFLALLSSFSNDLAATDDDNEMNNLQIAVGRMQKGIDFVK  
RKIREFIQKAFVRKQKALDEIK  
PLEDLNNKKDSCISNHTTIEIGKDLNYLKDGNGTTSIGIGSSVEKYVVDESDYMSFINNPSL  
TVTVPPIAVGESDFENLNT  
EFSSSESDMEESKEKLNATSSSEGSTVDIGAPAEGEQPEVEPEESLEPEACFTEDCVRKFKC  
CQISIEEGKGKLWWNLRKT  
CYKIVEHNWFETFIVFMILLSSGALAFEDIYIEQRKTIKTMLEYADKVFTYIFILEMLLKW  
VAYGFQVYFTNAWCWLDL  
IVDVSLVSLTANALGYSELGAIKSLRTLRLRPLRALSFEGRMRAVVNALLGAIPSIMNV  
LLVCLIFWLIFSIMGVNLFA  
GKFYHCINYTTGEMFDVSVNNYSECKALIESNQATARWKNVKVNFDNVGLGYLSLLQV  
ATFKGWMDIMYAAVDSRNVELQ  
PKYEDNLYMYLYFVIFIIFGSFFTLNLFIGVIIDNFNQKKKFGGQDIFMTEEQKKYYNAM  
KKLGSKKPQKPIRPANKF

QGMVDFVTKQVFDISIMILICLNMVTMMVETDDQSQEMTNILYWINLVFIVLFTGECVL  
KLISLRYYYFTIGWNIFDFV  
VVILSIVGMFLAELIEKYFVSPTLFRVIRLARIGRILRLIKGAKGIRTLLFALMMSLPALFNI  
GLLLFLVMFIYAIFGMS  
NFAYVKREVGIDDMFNFETFGNSMICLFQITTSAGWDGLLAPILNSGPPDCDPDKDHPGS  
SVKGDCGNPSVGIFFFVSYI  
IISFLVVVNMYIAVILENFSVATEESAEPLEDDFEMFYEVWEKFDPDATQFIEFAKLSDF  
ADALDPPLLIAPNKVQLI  
AMDLPMVSGDRIHCLDILFAFTKRVLGESGEMDALRIQMEERFMASNPSKVSYPEITTTL  
KRKQEEVSAIIIQRAYRRYL  
LKQKVKKVSSIIYKKDKGKECDGTPIKEDTLIDKLNENSTPEKTDMPSTTSPPSYDSVTK  
PEKEKFEKDKSEKEDKGKDI  
RESKK.

Seq. Id. No. 35 (cont'd)

MAQSVLVPPGPDSFRFFFTRESLAAIEQRIAEEKAKRPKQERKDEDDENGPKPNSDLEAGK  
SLPFIYGDIPPEMVSVPLED  
LDPYYINKKTFIVLNKGKAISRFSATPALYILTPFNPIRKLAIKILVHSLFNMLIMCTILTNC  
VFMTMSNPPDWTKNVEY  
TFTGIYTFESLIKILARGFCLEDFTFLRDPWNWLDFTVITFA YVTEFVN LGNV SALRTRV  
LRALKTISVIPGLKTIVGA  
LIQSVKKLSDVMILTVFCLSVFALIGLQLFMGNLRNKCLQWPPDNSSFEINITSFNNSLD  
GNGTTFNRTVSIFNWDEYI  
EDKSHFYFLEGQNDALLCGNSSDAGQCPEGYICVKAGRNPNGYTSFDTFSWAFLSLFR  
LMTQDFWENLYQLTLRAAGKT  
YMIFFVLVIFLGSFYLINLILAVVAMAYEEQNQATLEEAEQKEAEFQQMLEQLKKQQUEE  
AQAAAAAASAESRDFSGAGGI  
GVFSESSSVASKLSSKSEKELKNRRKKKKQKEQSGEEKNDRVLKSESEDSIRRKGRFRS  
LEGSRLTYEKRFSSPHQSL  
SIRGSLFSPRRNSRASLFSFRGRAKDIGSEND FADDEHSTFEDNDSRRDSL FVPHRHGERR  
HSNVSQASRASRVLPIPM  
NGKMHS AVDCNGVVSLVGGPSTLTSAGQLLPEGTTTETEIRKRRSSSYHVSMDLLEDPT  
SRQRAMSIA SILTNTMEELEE  
SRQKCPPCWYKFANMCLIWDCKPWLKVKHLVNLVVMDFVDLAITICIVLNTLFMAM  
EHYPMTEQFSSVLSVGNLVFTG  
IFTAEMFLKIIAMDPYYYFQEGWNIFDGFIVLSLSMELGLANVEGLSVLRSFRLLRVFKLA  
KSWPTLNMLIKIIGNSVGA  
LGNLTLVLAIIVFIFAVVGMQLFGKSYKECVCKISNDCELPRWHMHDFHFSFLIVFRVLC  
GEWIETMWDCMEVAGQTMCL  
TVFMMVMVIGNLVVLNLFLALLSSFSNDLAATDDDNEMNNLQIAVGRMQKGIDFVK  
RKIREFIQKAFVRKQKALDEIK  
PLEDLNNKKDSCISNHTTIEIGKDLNYLKDGN GTTSGIGSSVEKYVDES DYMSFINNPSL  
TVTVPIAVGESDFENLNT  
EFSSESDMEESKEKLNATSSSEGSTVDIGAPAEGEQPEVEPEESLEPEACFTEDCVRKFKC  
CQISIEEGKGKLWWNL RKT  
CYKIVEHNWFETFIVFMILLSSGALAFEDIYIEQRKTIKTMLEYADKVFTYIFILEMLLKW  
VAYGFQVYFTNAWCWLDL  
IVDVSLVSLTANALGYSELGAIKSLRTLRLRPLRALS RFEGMRAV VNAL LG AIPSIMNV  
LLVCLIFWLIFSIMGVNLFA  
GKFYHCIN YTTGEMFDVSVNNYSECKALIESNQ TARWKNVKVNF DN VGLGYLSLLQV  
ATFKGWMDIMYAAVDSRNVELQ  
PKYEDNLYMYLYFVIFIIFGSFFTLNLFIGVIIDNFNQKKKFGGQDIFMTEEQKKYYNAM  
KKLGSKKPQKPIRPANKF

QGMVDFVTKQVFDISIMILICLNMVTMMVETDDQSQEMTNILYWINLVFIVLFTGECVL  
KLISLRYYYFTIGWNIFDFV  
VVILSIVGMFLAELIEKYFVSPTLFRVIRLARIGRILRLIKGAKGIRTLLFALMMSLPALFNI  
GLLLFLVMFIYAIFGMS  
NFAYVKREVGIDDMFNFETFGNSMICLFQITTSAGWDGLLAPILNSGPPDCDPDKDHPGS  
SVKGDCGNPSVGIFFFVSYI  
IISFLVVVNMYIAVILENFSVATEESAEPLEDDFEMFYEVWEKFDPDATQFIEFAKLSDF  
ADALDPPLLIAPNKVQLI  
AMDLPMVSGDRIHCLDILFAFTKRVLGESGEMDALRIQMEERFMASNPSKVSYPEITTTL  
KRKQEEVSAIIIQRAYRRYL  
LKQKVKKVSSIIYKKDKGKECDGTPIKEDTLIDKLNENSTPEKTDMPSTTSPPSYDSVTK  
PEKEKFEKDKSEKEDKGKDI  
RESKK.

Seq. Id. No. 36 (cont'd)



Seq. Id. No. 37

a. exon 01 (formerly exon 00)

gaattctttatatgggttgaaatgactttctgacatagcaataaaaagcatgaggagaagcattatctgttaacaaaatt  
aacacttaaaatcaacaaagttttaagtgttcgtccaagaaaagcctgtggaagatcagttccacaactgagagctttg  
ggctgcttcagacatatgtctgtgtgtacgctgtgaagggttttctcttcacagttccccgccctctagtggtagttaca  
ataatgccattttgtagtcctgtacaggaaatgcctcttcttacttcagttaccagaatccttttacaggaagttagg  
gtggctttgaaggagaattaaaaaaaaaaaaaaaaaaaaaagatttttttttaagcatgatggaatttta  
gctgcagtcTTCTTGGGGCCAGCTTATCAATCCCCAACTCTGGGGGTAAAAGATTCTACA  
GGGgtaattgtttattattc  
ttattatgctattctctgtgatgcttctctacctttacagtagtagaatccttggggaaatctgcagaggaccacttt  
cattttgaagctgctggcgtcatgttttagcatgtctctctattagagaatccaggcatggcagtttctccccagtg  
tgcaaggaccatctcatgctatgtctgtcgttaggcatgagggtctctaggaatgggtgaaaaaatgagggatgttt  
tgagggactataatactggggagggcagctgtctagctggttagctgaaaggctcgtgttacttcaacatttttttaa  
ataaaactgtgcagtagttttgtatttttaggggtccctctgtttatctgggtgtatgtgcagaagtgaactgcataa  
cacatttcactcttagaaatgcattccatata

38  
exon 02 (formerly exon 01)

ctcagtgcatgtaactgacacaatcacctctatctaattggatcatgcttcttacctctgttctgtagCACTtTCTTATGC  
AAGGAGCTAAACAGTGATTAAAGGAGCAGGATGAAaAGATGGCACAGTCAGTGCTG  
GTACCGCCAGGACCTGACAGCTTC  
CGCTTCTTTACCAGGGAATCCCTTGCTGCTATTGAACAACGCATTGCAGAAGAGAAA  
GCTAAGAGACCCAAACAGGAACG  
CAAGGATGAGGATGATGAAAATGGCCCAAAGCCAAACAGTGACTTGGAAGCAGSAA  
AATCTCTTCCATTTATTTATGGAG  
ACATTCCTCCAGAGATGGTGTCACTGCCCCCTGGAGGATCTGGACCCCTACTATATCA  
ATAAGAAAgtagttcttagtca  
agttgccttcactgcctatttactaattggttctgggctagtcacaggatgatggtgaagaaggctggcctccttcct  
ctgtctaaagtatcactaagatgctggatgggcctgaccgtgtaattgaccaatgatcctagaagtcttttgaagcact  
catttgaacctgcattgtgagacaggcagagaactggtgaggcatcctccagcgcggaattaaggaaggacaaaagcc  
tattcaccttctgaatacaaatatagcttaaacagtgtaattgacctgattccctaataatgttgagaagcaaa  
aa

39  
exon 03 (formerly exon 02)

cctatggcattgatcacaaattttcttaataatcctcatgtcatttatcaaatttaggaaagttagtgctcagaaaa  
aaaaagcatctatctcatgtcatatgatggaattattatgttatcactattttacagggcaatatttataaataatg  
gttttacttttcttaaaatattcttaatatattctaagttttgtttatgtgtgtgttttcttttcagACGTTT  
ATAGTATTGAATAAAGGGAAAGCAATCTCTCGATTCACTGCCACCCCTGCCCTTTAC  
ATTTAACTCCCTTCAACCCTAT  
TAGAAAATTAGCTATTAAGATTTTGGTACATTCAatcccttttcaaatcgtcacttaatatgattttcttcttgac  
ca  
agttattgagctacacattttccaaaatatctgtgtgtggcaatgttatgtgttcttttcttttcttttactcaa  
tcgttagcatgttgcaaaatgagatcacaggtaagtgaattactttccccgtcttctaagtgtttcttcttacctaac

40

exon 04 (formerly exon 03)

acctaaatagcctcaaaatagttgatggcttgccctgaagacaagatctaaatagaggttgctgagttatagaaatggc  
 aaaaaaagggtcaataatagaataaagaacaaaataatagtaagcactaaagtttaacttcatgggtggaagg  
 catggtagtgcataaaagtaagattttccattgaacttgccttcctgacgatattctacTTTATTCAATATGCTCAT  
 TATGTGCACGATTCTTACCAACTGTGTATTTATGACCATGAGTAACCCCTCCAGACTG  
 GACAAAGAATGTGGAGtaagtat  
 aaatattttcaatattgacctccctttatgtttcatattgtgcttttaacacctgagacctcctcaatttcttaaca  
 aatcatgctagctactgttaaccagacctgattcaaatcatttctgactaaatgtcttctaggacaaagctttag  
 tgggctcacttagttgtgtaaatctgca

41

exon 05 (formerly exon 04)

taagatatgtacttgtaaataaaccactagatttttaatgtgagcttggctattgtctctcagGTATACCTTTACAGGAA  
 TTTATACTTTTGAATCACTTATTAAAATACTTGCAAGGGGCTTTTGTITAGAAGATTT  
 CACATTTTACGGGATCCATGG  
 AATTGGTTGGATTTACAGTCATTACTTTTGCgtaagtatcttaatacatttctatcctggaagagtaaatcactggtg  
 ggagcctatactatatttcccttgggtggcttgccctgacagaccaagcatttntcttagtaatacatagtttcttccaat  
 caaattatccagtttggagaaattaggaactatcatagtaaattacatgg

42

exon 06N (formerly exon 05N)

caattagcactgtaaagtaataaagtttccaaataacagagattatgatgatgacaatgccatttctcttaattgg  
 gaaagctgatggcgacactcatgaaattaaaaaggcttctgatgaaagaccaangaagacgtagatttccctaaattctga  
 ataactctgatttaattctacagGTATGTAACAGAATTTGTAAACCTAGGCAATGTTTCAGCTCTTC  
 GAACTTTCAGAGT  
 CTTGAGAGCTTTGAAAACCTATTTCTGTAATTCCAGgtaagaagaaaatggataaggtgtagggcccttat  
 atctcaa  
 ctgttcttgtgttctgtcattgtgttgtgtgaacccctattacag

43

exon 06A (formerly exon 05A)

gtaagaagaaaatggataaggtgtagggcccttatatctcaactgttcttctgttctgtcattgtgttgtgtgtg  
 aacccctattacagATATGTGACAGAGTTTGTGGACCTGGGCAATGTCTCAGCGTTGAGAAC  
 ATTCAGAGTTCTCCGAG  
 CATTGAAAACAATTTCAAGTCATTCCAGgtgagagctaggttaacaccgaggctgactttagctacagtgggtctacaat  
 cacagcttttgtgcagaagccttgttgcattgtcatattgcaataaatatgtaaaaagcaagaattggtacatcatt  
 ttttgatggatttgatttcttcttttaccggttgccttctttaaactattctaaatcagcctttaggttaacaag  
 tgttgcata

Seq. in Nr: 44  
 exon 07 (formerly exon 06)

aaagagtgttggaaatacacatttggttcatttcacagttttctaatgaacatacaagttctgctttcattcat  
 ttaccagctagtaggctttcatgaaaatgttatcaatcacaaacattaactaatattgttggcattctgcatgac  
 atttttattccaggccaagctcatgatattttgccggtaaaatagctgttgagtagtatatttaanttcccccttct  
 gatattgtttagGCCTGAAGACCATTGTGGGGGCCCTGATCCAGTCAGTGAAGAAGCTTTC  
 TGATGTCATGATCTTGA  
 CTGTGTTCTGTCTAAGCGTGTTTTCGCTAATAGGATTGCAGTTGTTTCATGGGCAACCT  
 ACGAAATAAATGTTTGCAATGG  
 CCTCCAGATAATTCTTCCTTTGAAATAAATATCACTTCCTTCTTTAACAATTCATTGG  
 ATGGGAATGGTACTACTTTCAA  
 TAGGACAGTGAGCATATTTAACTGGGATGAATATATTGAGGATAAAAgtaagataactctata  
 aaccattaagttgtt  
 agttctctaaatattaaatattatataatggaaattatctcaatttagatgtgaatcaagttagactaatttaa  
 gatgatttaatacatataaaagagatatcaaggataccttattctattttsttatctgccattgatatagtaaaagt  
 tctcatttgaatgtgtgtcttatactcatgttgaaagtaattcatattatgccattaaaaagggttatttgg  
 agacattaatcagggttttcagtcattttaataaataagtcagtagtttgaactattcmgctattccactgaaatgtcg  
 ttaagaagactgaggggaaataatttggccctatttgggtgatgcaacatatgtattgaglacatatgtatatctgaaa  
 cttagagaaaccatttatcaagatgaataagaatttgtgtgctcctcagaaggtaagtaaccctgatttagccattcac  
 ttcatccatattctaattagtcctt

45  
 exon 08 (formerly exon 07)

gttcaattattgtgaaaaatcttcttagccatatatatttattagtttatccatctcattatgattgaaaacatttgtg  
 agctttgccacctaacagggtggctgaagtgtttacaggattttaatgattcttctattccttctttaaataagG  
 TCACTTTTATTTTTTACAGGGGGCAAATGATGCTCTGCTTTGTGGCAACAGCTCAGAT  
 GCAGGgtaagtgtatgcttct  
 actgagtttcagtcacactgtcccatcagtgcaataacctgccacctccactcatccagtcaccaccactcctcactc  
 aaaaccctccataaattctacttcacggtgactctcagaatgaccaggataagtgtagattctca

46  
 exon 09 (formerly exon 08)

tataataatgacaattatgaatcacagaggaatccacaaagtagaccttatagattctgtcattatataaatcagtccac  
 ttagtgctgagttaagtactgggtaaggtgagagaaatcggtttttctagtgcctgtataaacagacattggcatat  
 attaaaacaggaaaaccaattagcagacttgcggttattgactyccctcttctccttaacctaattacagCCAGTGTCC  
 TGAAGGATACATCTGTGTGAAGGCTGGTAGAAACCCCACTATGGCTACACGAGCT  
 TTGACACCTTTAGTTGGGCCTTTT  
 TGTCTTATTTTCGTCTCATGACTCAAGACTTCTGGGAAAACCTTTATCAACTGgtgagaac  
 agataaaatcattttctg  
 agaatacataaaacaccgaactcaagagaat

Seq. Id. No. 47  
 exon 10 (formerly exon 09)

tgctgtagaatattttactttagagtgttaagttgttaacatcctatataaaatttataaaatctctctccatttg  
 cagACACTACGTGCTGCTGGGAAAACGTACATGATATTTTTTGTGCTGGTCATTTTCTT  
 GGGCTCATTCTATCTAATAAA  
 TTTGATCTTGGCTGTGGTGGCCATGGCCTATGAGGAACAGAATCAGGCCACATTGGA  
 AGAGGCTGAACAGAAGGAAGCTG  
 AATTTTCAGCAGATGCTCGAACAGTTGAAAAAGCAACAAGAAGAAGCTCAGgtatagtga  
 caagcatacggtccttgtt  
 ttctgtatctaaattcttaacctaaatgttgaggtcagtggaaggttagtgcattagaaataggcatatgtgtt  
 ggtaagtgctaggagcctgttgggtattaagaagttattactttattgcaatgatctctgtcaatagtgtcaatagtaa  
 tggcatcaaaaaatggataattataattgctttactgacattttttctccctgtgactccttgaggaaattaatgatt  
 aacaaaggcctcatgtactcaaactgcagagtagataaacctacatgtcctcagttgaagtatttctlaggggaagag  
 gaattc

46  
 exon 11 (formerly exon 10a)

tatgtatcatcttccatataatgaatgcgcattttactctttgattgggtctaataacagtgtactgtgttctaaaacacagaa  
 taaaatggagaattgttttcaagattatcttcatgatattgaagctcaattaagcagtaacatgataattttttaa  
 gatnatatgcaacttcccacatactttgcgcccttctagGCGGCAGCTGCAGCCGCATCTGCTGAATCAAGA  
 GACTTCAG  
 TGGTGCTGGTGGGATAGGAGTTTTTTTCAGAGAGTTCTTCAGTAGCATCTAAGTTGAG  
 CTCCAAAAGTGAAAAAGAGCTGA  
 AAAACAGAAAGAAAGAAAAAGAAACAGAAAGAACAGTCTGGAGAAGAAGAGAAAA  
 ATGACAGAGTCCTAAAATCGGAATCT  
 GAAGACAGCATAAGAAGAAAAGGTTTCCGTTTTTCCTTGGAAGGAAGTAGGCTGAC  
 ATATGAAAAGAGATTTTCTTCTCC  
 ACACCAggtaaaaatattaaattacatgaattgtgttctcataaatttttaaaagaatatgccagaatttaattggagag  
 aaaaccgccttccacctggatggcacaatgctttcagagtagtgatgattatcaagtggtttggctatcacttcagagaa  
 ttgtgagttttgcaactttttggaatcccaggaaggaaatttagatccctctgggtttggaataattg

49  
 exon 12 (formerly exon 10b)

ttatggggacacttctgactatgttgaggtgtgggttaaagtaggagaaaagagagcagaagatggaaaatggaggaagga  
 gaaaaagcgagagtgaatagaaaaggtgaacctgtagaagtgccaaaatgccaccagcagtcacagaggggtgctt  
 tctccacatgtccaatgacttatccttgagtaagtcaatgactatgacacaatgaatcaattctgttttcagaatgc  
 cagctcttaactcttcatctcattttgtttctttctgttattcatagTCCTTACTGAGCATCCGTGGCTCCCTTT  
 TCTCTCCAAGACGCAACAGTAGGGCGAGCCTTTTCAGCTTCAGAGGTGAGCAAAG  
 GACATTGGCTCTGAGAATGACTTT  
 GCTGATGATGAGCACAGCACCTTTGAGGACAATGACAGCCGAAGAGACTCTCTGTT  
 CGTGCCGCACAGACATGGAGAACG

GCGCCACAGCAATGTCAGCCAGGCCAGCCGTGCCTCCAGGGTGCTCCCCATCCTGCC  
 CATGAATGGGAAGATGCATAGCG  
 CTGTGGACTGCAATGGTGTGGTCTCCCTGGTCGGGGGCCCTTCTACCCTCACATCTG  
 CTGGGCAGCTCCTACCAGAGgtg

aggccaacyymagattgcagctgatgtgaagagagttgtgactgggtgcaggcaggagtggtttccattmccacatctaa  
 gaatttkttgagtttstgcccaggctgggagttgttcaatcaagctgttaactgtcttgtaaactsttctattca  
 gacttctacaaagtaattaaaaacctaggttggctgtcagagaatataattagamtmatctttcatcayyattacta  
 tggatgaaactcgccaaaaagcaaaagcaacaattatcaagcataatgttygaytaatatagttaaattaaatccaagg  
 aaattaatgctcacaattaaataaacttaaggattttgtgattgtgttcattaaaaggaga

50

exon 13 (formerly exon 10c)

ataggaagcccaccttgacaacccagggctccccaaaagctgaaaatctgacagactttaacaacccccaaataatt  
 atcattccaacaatatcttagtgagctttttacatctgagaaagcatgggtatatttagttaataacacctgtttag  
 gaatgcttgggcttggctgttcaaaaatagtggttattcatctgaaattctactctagGGCACAACACTACTGAAAC  
 AGAAATAAGAAAGAGACGGTCCAGTTCTTATCATGTTTCCATGGATTTATTGGAAGA  
 TCCTACATCAAGGCAAAGAGCAA  
 TGAGTATAGCCAGTATTTTGACCAACACCATGGAAGgtatgttaaagtcctgcgtcacagtacttggtg  
 ctttcctaa  
 tgatgaaaaacacttcataaattcaataaaatacttcctgacttgatattgtatcattattacacattttactaaataa  
 cagtaaaatccgtgcataactcatggattcatatattccacagattttttttatatttagcctgtagaagctgct  
 gcaaatgtaagggtatattgaacaccactttcataacttaa

51

exon 14 (formerly exon 11)

gcttactagcctttctgtactgatcctttctatgacagcaaaccattgtaaaatttccctgttccctccagcagattaa  
 cccataatatcttttaacaacttttagatttttaaatcccttttaatttaaaccaaatctgcttaatagaaagtaagcag  
 tttcatgaggattctaacttttttctccagAACTTGAAGAATCCAGACAGAAATGCCACCATGCTGGT  
 ATAAATTT  
 GCTAATATGTGTTTGATTTGGGACTGTTGTAAAGCATGGTTAAAGGTGAAACACCTT  
 GTCAACCTGGTTGTAATGGACCC  
 ATTTGTTGACCTGGCCATCACCATCTGCATTGTCTTAAATACACTCTTCATGGCTATG  
 GAGCACTATCCCATGACGGAGC  
 AGTTCAGCAGTGTACTGTCTGTTGGAAACCTGgtaagcctcactgagagtttcttctccttgaaagagttataattg  
 ccttagtaattttacatattgctctcaaatataatcaactaattggccatgtatatcttgacatcaaatgttagca  
 tcccttttaataacaaaaaatgtgtaccatagtcaaaagagtcaagaatttatgtacaatttgatttagaattg  
 aattt

52

exon 15 (formerly exon 12)

tggcccaaaccaatttttaaatcaggaatttaattwtatattgttgggagttaaattaagttgctcaataattattcgt  
 gtttcaakastatttgctcatataatgaactacacttctcatttagGTCTTCACAGGGATCTTCACAGCAGAAATGT  
 TTC  
 TCAAGATAATTGCCATGGATCCATATTATTACTTTCAAGAAGGCTGGAATATTTTTG  
 ATGGTTTTATTGTGAGCCTTAGT  
 TTAATGGAACCTGGTTTGGCAAATGTGGAAGGATTGTCAGTTCTCCGATCATTCCGG  
 CTGgtaaattaactgggagtgtt  
 cataaaatgtactttrtaattaattagttcttctcatctagtaaaaatggcaagatttccatcattataatatt  
 tgaatacxcttctaaacagattggattgccataccaccaaatggtagtttcttctcatcatagctttaataaagtcca  
 cttaaa

53

exon 16 (formerly exon 13)

acagatttctcctgtgtccatgtgactaaccxcattgtgcacatgtaccctaaaaaxttagtatataataataaaataa  
 aataaaaaataaxaaataaaaaataaaaaataaaattgcagatttttttagaatgcagagxattaacactgttct  
 tgcittttattccagCTCCGAGTTTTCAAGTTGGCAAAATCTTGGCCAACTCTAAATATGCTAA  
 TTAAGATCATTGGCAA  
 TTCTGTGGGGGCTCTAGGAAACCTCACCTTGGTATTGGCCATCATCGTCTTCATTTTT  
 GCTGTGGTTCGGCATGCAGCTCT  
 TTGGTAAGAGCTACAAAGAATGTGTCTGCAAGATTCCAATGATTGTGAACTCCAC  
 GCTGGCACATGCATGACTTTTTT  
 CACTCCTTCCTGATCGTGTTCGCGTGCTGTGTGGAGAGTGGATAGAGACCATGTGG  
 GACTGTATGGAGGTCGCTGGCCA  
 AACCATGTGCCTTACTGTCTTCATGATGGTCATGGTGATTGGAAATCTAGTGgtatgtagc  
 aaaaacatttctcattt  
 tcattaaaaxataatgtaatcattaaaaagtxgttcaactgaagaata

54

exon 17 (formerly exon 14)

gtttcatttagcaatgatttcagttatttctgcaatgactaataagcaaatagtataatgattattttatattgacc  
 aagcatttttatttcattcattttttcagaatagtgatcatgaattagcagaaatgcattgtagaataaaataaggt  
 gtcaagaacaatcttagaaaactaatgatggaagcaattgaagcaatagaatgtttgatcacctgttttctgctgt  
 gtttcagGTTCTGAACCTCTTCTTGGCCTTGCTTTTGAGTTCCTTCAGTTCTGACAATCTTG  
 CTGCCACTGATGATGATA  
 ACGAAATGAATAATCTCCAGATTGCTGTGGGAAGGATGCAGAAAGGAATCGATTTT  
 GTTAAAGAAAAATACGTGAATTT  
 ATTCAGAAAGCCTTTGTTAGGAAGCAGAAAGCTTTAGATGAAATTAAACCGCTTGAA  
 GATCTAAATAATAAAAAAGACAG  
 CTGTATTTCCAACCATAACCACATAGAAATAGGCAAAGACCTCAATTATCTCAAAGA  
 CGGAAATGGAACCTACTAGTGGCA

TAGGCAGCAGTGTAGAAAAATATGTCGTGGATGAAAGTGATTACATGTCATTTATAA  
 ACAACCCTAGCCTCACTGTGACA  
 GTACCAATTGCTGTTGGAGAATCTGACTTTGAAAATTTAAATACTGAAGAATTCAGC  
 AGCGAGTCAGATATGGAGGAAAG  
 CAAAGAGgtaaatgttaaataaggagatatatttggtgtatataatctgtgttaatatcaggtgttaatgcgtgtctc  
 tgt

55  
 exon 18 (formerly exon 15)

atctctatactaggctcaaacagaagtatttccgtttagcaccatattttaaaagaaaaaaaatactatggtgtt  
 gtatcfaatntgtgacccctgacctttaccaaagcgattggcattatgtttaagttcttaattacagatcaagaaaa  
 tgcatacagaagatgggggggggcacacctaattttatatttagattaaagaaaataattaaatgtgtttttg  
 tgggattgatttcagAAGCTAAATGCAACTAGTTCATCTGAAGGCAGCACGGTTGATATTGG  
 AGCTCCCGCCGAGGGAG  
 AACAGCCTGAGGTTGAACCTGAGGAATCCCTTGAACCTGAAGCCTGTTTTACAGAAG  
 nnnnnnnnaagcaaaacaataa  
 catatgtggtcttgagtatcctcttttctacccatttttctatttttaaagtctgtttatttctaccatctag  
 ttcatctatctatctgtatctatctatctatctatctagtaatcatctatacctatccaacaactgtacatttatt  
 tgtttttttttgcattttgcgttttgaaaaaaatgcaacgttttaaggcaa

56  
 exon 19 (formerly exon 16)

gatagcttttgaagcggaagctatcttaaaaattaatgttatttacaatgtattatcaggtaataatgtaaatgaatct  
 cccaccaacacaaatatacctaatcaagagtaatttttgccttcattttttccacatatatttagACTGTGTACGGA  
 AGTTCAAGTGTTGTCAGATAAGCATAGAAGAAGGCAAAGGGAAACTCTGGTGAAT  
 TTGAGGAAAACATGCTATAAGATA  
 GTGGAGCACAAATTGGTTCGAAACCTTCATTGTCTTCATGATTCTGCTGAGCAGTGGG  
 GCTCTGgtaggtgatgcatgac  
 cactccttcacctttcatctgaaatctttccctttcccttcaatcaactcatattaccacattttaaatgaagtggtt

57  
 exon 20 (formerly exon 17)

aaattactgaaacccttggttgactgaaatgccagtcagcagtcatttatgatcagataatgataaagtaaaattcagc  
 catgggaaacattaaaccttcagccttaggcacctgataagagcttgcatcgtttcctttttaagaaatcatcaatta  
 gagactgtttctgatcataaaatttaataagaatttttgacttacagGCCTTTGAAGATATATACATTGAGCAGCGA  
 AAA  
 ACCATTAAGACCATGTTAGAATATGCTGACAAGGTTTTCACTTACATATTCATTCTG  
 GAAATGCTGCTAAAGTGGGTTGC  
 ATATGGTTTTCAAGTGTATTTTACCAATGCCTGGTGCTGGCTAGACTTCCTGATTGTT  
 GATgtgagtagtgcactttg  
 ctgctttattcattggcatatatgtaatagttctagcaatggtgcctgacacagtgtaggcactcagtaacactgtatca  
 gcccaaatataaattatgtttctcatttcacagtgagaggatgcctcaaacattttttaccaatttaatacatatataca

58

exon 21 (formerly exon 18)

aaattcttaggcctttccccaacttactaagtcagactctgctattgggtgttttaacaagaccctgggtgatttga  
 aactcatgaaagtcgagaattactgattcattgcatagagcaaggctgaactgtgtagacattttatatgtaaataag  
 aaaattgtgtgctttttctgtatagGTCTCACTGGTTAGCTTAACTGCAAATGCCTTGGGTACTCAG  
 AACTTGGTGCC  
 ATCAAATCCCTCAGAACACTAAGAGCTCTGAGGCCACTGAGAGCTTTGTCCCGGTTT  
 GAAGGAATGAGGGtaagactgaa  
 tgccttagagtttgcagaattattattgagagcagactgacacttgtaccatggaaatgtcaaattatggagaatt  
 gtgtcttacacattacactgacatagctaataatcaaaaataataattaccagatgcccataataacttggcactgctg

59

exon 22 (formerly exon 19)

taattttaaaattcttagtggagctaccagagtctagtttctaccaatattcaactttgaaacagatttttaataca  
 ttgactgttctttaataatgtttaaaaataagtaaatattgttggcttttacttattttccttctcatcctg  
 tgccagGTTGTTGTAAATGCTCTTTTAGGAGCCATTCCATCTATCATGAATGTACTTCTG  
 GTTTGTCTGATCTTTTGGCT  
 AATATTCAAGTATCATGGGAGTGAATCTCTTTGCTGGCAAGTTTTACCATTGTATTAAT  
 TACACCACTGGAGAGATGTTTG  
 ATGTAAGCGTGGTCAACAACACTACAGTGAGTGCAAAGCTCTCATTGAGAGCAATCAA  
 ACTGCCAGGTGGAAAAATGTGAAA  
 GTAAACTTTGATAACGTAGGACTTGGATATCTGTCTCTACTTCAAGTAgttaagtaatacatttat  
 tatttccatgatg  
 gtaattaaaatgagtctaaagtttttcttctcataatgagatatccacctgtagaatggctattatcaaacagataaa  
 tgacaataaatgctgcaagaatgtgaagaaaaggaaccctgtacattgttggcaggatgtaaattagtagcttt

60

exon 23 (formerly exon 20)

atttgaagtattttcaatgcataatcgaaaacattgccccaaaagtgaatacaaatccaagcttatttatgcctgta  
 ttgaatacatgcaaatagaattttgatcaattatcaattttttctaaaattataattttgggaaaaaagaaatga  
 tatgacttttctacagGCCACGTTTAAGGGATGGATGGATATTATGTATGCAGCTGTTGATTCA  
 CGAAATgtaagtcta  
 gtttagagggaattgttagttgattaaatgtatatttctacaatattgtaatttagtgatattgtcaataaaataaaa  
 ttatgtgcttaatttataaaacccatctatattataaggataaaatatttaatacactattttcttcaaaattatcata  
 ggatgattttctctaactctgtatcttttaacatacttttctagtttagcaaggcacctgacacaaaactttat

61

exon 24 (formerly exon 21)

taaaacatgcttagataaataaaaactcactgatgtactttttgtgaacaagtactagatataatggttacaattcttc  
 atattcttttagGTAGAATTACAACCCAAGTATGAAGACAACCTGTACATGTATCTTTATTTT  
 GTCATCTTTATTATTTT  
 GGTTCAATCTTTACCTTGAATCTTTTCATTGGTGTTCATCATAGATAACTTCAACCAAC  
 AGAAAAAGAAgataagtatatt  
 aaaacttcatccttgctctgaaatatgaactaaatatttcatacttttctttagcctccaaaatgcaatcaccaaaaa  
 aagaatataaaattcagaatatttttgagacatttgataatcgat



<sup>62</sup>  
exon 25 (formerly exon 22)

tcgataagcttttaagcaattaataatcagatagcatgttttgatatttttagtctagaaatgactaatatggcat  
aatttatattgaataaaggcatctctataatacagatattagtaacaatagaatgaaatgtgggagccaattttcac  
atgattactaagggtgattttatagccagcaagaacacaaatttaacaagtgttgctttcatttctttacTTTGGAGGT  
CAAGACATTTTTATGACAGAAGAACAGAAGAAATACTACAATGCAATGAAAAAACT  
GGGTTCAAAGAAACCACAAAAACC  
CATACCTCGACCTGCTgtaagaataacatattttcattgcctgttaaaactatattacctaaccgtttcacagcccgaat  
ttctagaaactagttattttgtggattgtaacacaaagtttttaccttaacaatgggactagctagcctaataagct  
tgaaaaatgtactttacatatataatgtataaattatataatgcataacatattttatgtaaacataaaaataca

<sup>63</sup>  
exon 26 (formerly exon 23)

gtttgcaaggaattttttttgtaaaatgtgtgaggattaaagatgtgttttataaaagctacatttttgttgc  
ttcttaaaatcagaagaattgaatcgattttttaagggttctaattgaacttttacatattatttgtccagAACA  
AATTCCAAGGAATGGTCTTTGATTTTGTAAACCAAACAAGTCTTTGATATCAGCATCA  
TGATCCTCATCTGCCTTAACATG  
GTCACCATGATGGTGGAAACCGATGACCAGAGTCAAGAAATGACAAACATTCTGTA  
CTGGATTAATCTGGTGTTTATTGT  
TCTGTTCACTGGAGAATGTGTGCTGAAACTGATCTCTCTTCGTTACTACTATTTCACT  
ATTGGATGGAATATTTTTGATT  
TTGTGGTGGTCATTCTCTCCATTGTAGgtaagaagaggtgcttttattcagttaaggaatatagtggtaaaaatagtgt  
tttaaaactttagaggtgttttactaatctttcattcatcccaactcccaataaaaatcctaagtcattgtt  
ttagtttagttgccatttctctaattgcatgctgtgcttgaaatgatgagtggaatacaaggaatttatattttcagc  
tttcatttat

<sup>64</sup>  
exon 27 (formerly exon 24)

aatgttataacaccaaaacataaccagtttcattttgctcaacaaacattgcagattatttgcataatacatgtacctaac  
tgtcctgttcacattttgtaaaactaatgtacttatgtaaactttcatttgcactatttaagtataacaatattttgtt  
atttgttgattttctacagGAATGTTTCTGGCTGAACTGATAGAAAAGTATTTTGTGTCCCCTACC  
CTGTTCCGAGTGAT  
CCGTCTTGCCAGGATTGGCCGAATCCTACGTCTGATCAAAGGAGCAAAGGGGATCC  
GCACGCTGCTCTTTGCTTTGATGA  
TGTCCCTTCCTGCGTTGTTTAAACATCGGCCTCCTTCTTTTCCTGGTCATGTTTCATCTAC  
GCCATCTTTGGGATGTCCAAT  
TTTGCCTATGTAAAGAGGGAAGTTGGGATCGATGACATGTTCAACTTTGAGACCTTT  
GGCAACAGCATGATCTGCCTGTT  
CCAAATTACAACCTCTGCTGGCTGGGATGGATTGCTAGCACCTATTCTTAATAGTGG  
ACCTCCAGACTGTGACCCTGACA  
AAGATCACCTGGAAGCTCAGTTAAAGGAGACTGTGGGAACCCATCTGTTGGGATTT  
TCTTTTTTGTCAAGTTACATCATC  
ATATCCTTCCTGGTTGTGGTGAACATGTACATCGCGGTCATCCTGGAGAACTTCAGT  
GTTGCTACTGAAGAAAGTGCAGA

GCCTCTGAGTGAGGATGACTTTGAGATGTTCTATGAGGTTTGGGAGAAGTTTGATCC  
CGATGCGACCCAGTTTATAGAGT  
TTGCCAAACTTTCTGATTTTGCAGATGCCCTGGATCCTCCTCTTCTCATAGCAAACC  
CAACAAAGTCCAGCTCATTGCC  
ATGGATCTGCCCATGGTGAGTGGTGACCGGATCCACTGTCTTGACATCTTATTTGCTT  
TTACAAAGCGTGTTTTGGGTGA  
GAGTGGAGAGATGGATGCCCTTCGAATACAGATGGAAGAGCGATTTCATGGCATCAA  
ACCCCTCCAAAGTCTCTTATGAGC  
CCATTACGACCACGTTGAAACGCAAACAAGAGGAGGTGTCTGCTATTATTATCCAGA  
GGGCTTACAGACGCTACCTCTTG  
AAGCAAAAAGTTAAAAAGGTATCAAGTATATACAAGAAAGACAAAGGCAAAGAAT  
GTGATGGAACACCCATCAAAGAAGA  
TACTCTCATTGATAAACTGAATGAGAATTCAACTCCAGAGAAAACCGATATGACGCC  
TTCCACCACGTCTCCACCCTCGT  
ATGATAGTGTGACCAAACCAGAAAAAGAAAAATTTGAAAAAGACAAATCAGAAAA  
GGAAGACAAAGGGAAAGATATCAGG  
GAAAGTAAAAAGTAAAAAGAAACCAAGAATTTCCATTTTGTGATCAATTGTTTACA  
GCCCCGTGATGGTGATGTGTTTGT  
GTCAACAGGACTCCACAGGAGGTCTATGCCAACTGACTGTTTTTACAAATGTATA  
CTTAAGGTCAGTGCCTATAACAA  
GACAGAGACCTCTGGTCAGCAAACCTGGAACCTCAGTAACTGGAGAAATAGTATCGA  
TGGGAGGTTTCTATTTTCACAACC  
AGCTGACACTGCTGAAGAGCAGAGGCGTAATGGCTACTCAGACGATAGGAACCAAT  
TTAAAGGGGGGAGGGAAGTTAAAT  
TTTTATGTAAATTCAACATGTGACACTTGATAATAGTAATTGTCACCAGTGTTTATGT  
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TTTTTACAAAACGTGTGCTGTGAATTTATCACTTTTCTTTTAAATTCACAGGTTGTTTA  
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GTAAATGGGTTTGTGTTTGGGGAGAGGGATTAAAGGGAGGGAATTCTACATTTCTCT  
ATTGTATTGTATAACTGGATATA  
TTTTAAATGGAGGCATGCTGCAATTCTCATTACACATAAAAAAATCACATCACAAA  
AGGGAAGAGTTTACTTCTTGTTT  
CAGGATGTTTTTAGATTTTGGAGGTGCTTAAATAGCTATTCGTATTTTTAAGGTGTCT  
CATCCAGAAAAAATTTAATGTG  
CCTGTAAATGTTCCATAGAATCACAAGCATTAAAGAGTTGTTTTATTTTTACATAACC  
CATTAAATGTACATGTATATAT  
GTATATATGTATATGTGCGTGTATATACATATATATGTATACACACATGCACACACA  
GAGATATACACATAACCATTACAT  
TGTCATTACAGTCCCAGCAGCATGACTATCACATTTTGTGATAAGTGTCTTTGGCAT  
AAAATAAAAATATCCTATCAGT

CCTTTCTAAGAAGCCTGAATTGACCAAAAAACATCCCCACCACCACCTTTATAAAGTT  
GATTCTGCTTTATCCTGCAGTAT  
TGTTTAGCCATCTTCTGCTCTTGGTAAGGTTGACATAGTATATGTCAATTTAAAAAAT  
AAAAGTCTGCTTTGTAAATAGT  
AATTTTACCCAGTGGTGCATGTTTGAGCAAACAAAAATGATGATTTAAGCACACTAC  
TTATTGCATCAAATATGTACCAC  
AGTAAGTATAGTTTGCAAGCTTTCAACAGGTAATATGATGTAATTGGTTCCATTATA  
GTTTGAAGCTGTCACTGCTGCAT  
GTTTATCTTGCCTATGCTGCTGTATCTTATTCCTTCCACTGTTTCTAGAAGTCTAATATG  
GGAAGCCATATATCAGTGGTAA  
AGTGAAGCAAATTGTTCTACCAAGACCTCATTCTTCATGTCATTAAGCAATAGGTTG  
CAGCAAACAAGGAAGAGCTTCTT  
GCTTTTTATTCTTCCAACCTTAATTGAACACTCAATGATGAAAAGCCCGACTGTACA  
AACATGTTGCAAGCTGCTTAAAT  
CTGTTTAAAATATATGGTTAGAGTTTTCTAAGAAAATATAAATACTGTAAAAAGTTC  
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TTGTACGTAAAATGAGAAATTAAGAGTATCTTCAGGTGGATGTCACAGTCACTATTG  
TTAGTTTCTGTTTCTAGCACTTT  
TAAATTGAAGCACTTCACAAAATAAGAAGCAAGGACTAGGATGCAGTGTAGGTTTC  
TGCTTTTTTATTAGTACTGTAAAC  
TTGCACACATTTCAATGTGAAACAAATCTCAAACCTGAGTTCAATGTTTATTTGCTTTC  
AATAGTAATGCCTTATCATTGA  
AAGAGGCTTAAAGAAAAAATAATCAGCTGATACTCTTGGCATTGCTTGAATCCAA  
TGTTTCCACCTAGTCTTTTTATTC  
AGTAATCATCAGTCTTTTCCAATGTTTGTTTACACAGATAGATCTTATTGACCCATAT  
GGCACTAGAACTGTATCAGATA  
TAATATGGGATCCCAGCTTTTTTCTCTCCCAAAAACCAGGTAGTGAAGTTATATT  
ACCAGTTACAGCAAAATACTTT  
GTGTTTCACAAGCAACAATAAATGTAGATTCTTTATACTGAAGCTATTGACTTGTAG  
TGTGTTGGTGAATGCATGCAGGA  
AGATGCTGTTACCATAAAGAACGGTAAACCACATTACAATCAAGCCAAAGAATAAA  
GGTTCGCTTATGTATATGTATTa  
attgttgctttgtttctatcttgaaatgccatttaaaggtagatttctatcatgtaaaataatctatctgaaaaaca  
aatgtaaagaacacacatta

accatagagtgaatctcagaacaggaagcggaggcataagcagagaggattctggaaaggctctttgttttctatcca  
cagagaaagaaagaaaaaaattgtaactaattgtaaacctctgtggtcaaaaaaaaaaaaaaaaaaaagctgaaca  
gctgcagaggaagacacgttataccctaacctcttgatgctgggctttgtatgctgtaaitcataaggctctgttt  
atcagagattatggagcaagaaaactgaagccaagccacatcaaggtttgacagggatgagataacctgtcaaggattcat  
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gacctggagcttttccgaaaaaggtgctgtgactatctaaggggaaaagctgagagctggaactagcctatcttccga  
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cccttgataagtaataagaaggtaattcgtatgcaagaagctacacgtaattaaatgtgcaggatgaaaagATGGCACA  
GGCACTGTTGgTACCCCCAGGACCTGAAAGCTTCCGCCtTTTACTAGAGAATCTCTT  
GCTGCTATCGAAAAACGTGCTG  
CAGAAGAGAAAGCCAAGAAGCCCCAAAAAGGAACAAGATAATGATGATGAGAACAA  
ACCAAAGCCAAATAGTGACTTGGAA  
GCTGGAAAGAACCCTTCCATTTATTTATGGAGACATTCCTCCAGAGATGGTGTGAGAG  
CCCCTGGAGGACCTGGATCCCTA  
CTATATCAATAAGAAAACCTTTTATAGTAATGAATAAAGGAAAGGCAATTTCCCGATT  
CAGTGCCACCTCTGCCTTGTATA  
TTTTAACTCCACTAAACCCTGTTAGGAAAATTGCTABSAAGATTTTGGTACATTCTTT  
ATTCAGCATGCTTATCATGTGC  
ACTATTTTGACCAACTGTGTATTTATGACCTTGAGCAACCCTCCTGACTGGACAAAG  
AATGTAGAGTACACATTCACCTGG  
AATCTATACCTTTGAGTCACTTATAAAAATCTTGGCAAGAGGGTTTTGCTTAGAAGA  
TTTTACGTTTCTTCGTGATCCAT  
GGAAGTGGCTGGATTTCAAGTGTCATTGTGATGGCATATGTGACAGAGTTTGTGGACC  
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ACATTCAGAGTTCTCCGAGCACTGAAAACAATTTCAAGTCATTCCAGGTTTAAAGACC  
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GGTAAAGAAGCTTTCTGATGTGATGATCCTGACTGTGTTCTGTCTGAGCGTGTTTGCT  
CTCATTGGGCTGCAGCTGTTCA  
TGGGCAATCTGAGGAATAAATGTTTTGCAGTGGCCCCCAAGCGATTCTGCTTTTGAAA  
CCAACACCACTTCCTACTTTAAT  
GGCACAATGGATTCAAATGGGACATTTGTTAATGTAACAATGAGCACATTTAACTGG  
AAGGATTACATTGGAGATGACAG  
TCATTTTATGTTTTGGATGGGCAAAAAGACCCTTTACTCTGTGGAAATGGCTCAGA  
TGCAGGCCAGTGTCCAGAAGGAT  
ACATCTGTGTGAAGGCTGGTCGAAACCCCAACTATGGCTACACAAGCTTTGACACCT  
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GCTGGGAAAACATACATGATATT  
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TGGCCATGGCCTATGAGGGGC

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GAAGACAGCGTCAAAAGAAGCAGC  
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GACTCACTGTTTGTGCCGCACAGA  
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TTGAAGAATCTAGACAGAAATGTCCGCCATGCTGGTATAGATTTGCCAATGTGTTCT  
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TTACTGGGATTTTTACAGCAGAAATGGTTCTCAAGATCATTGCCATGGATCCTTATTA  
CTATTTCCAAGAAGGCTGGAAT  
ATCTTTGATGGAATTATTGTCAGCCTCAGTTTAATGGAGCTTGGTCTGTCAAATGTGG  
AGGGATTGTCTGTACTGCGATC  
ATTCAGACTGCTTAGAGTTTTCAAGTTGGCAAAATCCTGGCCCACACTAAATATGCT  
AATTAAGATCATTGGCAATTCTG  
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GCACATGAACGACTTCTTCCACTC  
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TATGGAGGTCGCTGGCCAAACCA  
TGTGCCTTATTGTTTTCATGTTGGTCATGGTCATTGGAAACCTTGTGGTTCTGAACCT  
CTTTCTGGCCTTATTGTTGAGT  
TCATTTAGCTCAGACAACCTTGCTGCTACTGATGATGACAATGAAATGAATAATCTG  
CAGATTGCAGTAGGAAGAATGCA

AAAGGGAATTGATTATGTGAAAAATAAGATGCGGGAGTGTTTCCAAAAAGCCTTTTT  
TAGAAAGCCAAAAGTTATAGAAA  
TCCATGAAGGCAATAAGATAGACAGCTGCATGTCCAATAATACTGGAATTGAAATA  
AGCAAAGAGCTTAATTATCTTAGA  
GATGGGAATGGAACCACCAGTGGTGTAGGTACTGGAAGCAGTGTTGAAAAATACGT  
AATCGATGAAAATGATTATATGTC  
ATTCATAAACAACCCAGCCTCACCGTCACAGTGCCAATTGCTGTTGGAGAGTCTGA  
CTTTGAAAACCTTAAATACTGAAG  
AGTTCAGCAGTGAGTCAGAACTAGAAGAAAGCAAGGAGAAATTAAATGCAACCAGC  
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GTTGTTCTACCCCGAGAAGGTGAACAAGCTGAAACTGAACCCGAAGAAGACCTTAA  
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ATGTATTAAAAAGTTTCCATTCTGTCAAGTAAGTACAGAAGAAGGCAAAGGGAAGA  
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GCTACAGTATTGTTGAGCACAACCTGGTTTGAGACTTTCATTGTGTTTCATGATCCTTCT  
CAGTAGTGGTGCATTGGCCTTT  
GAAGATATATACATTGAACAGCGAAAGACTATCAAACCATGCTAGAATATGCTGA  
CAAAGTCTTTACCTATATATTCAT  
TCTGGAAATGCTTCTCAAATGGGTTGCTTATGGATTTCAAACATATTTCACTAATGCC  
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TCGTTGATGTTTCTTTGGTTAGCCTGGTAGCCAATGCTCTTGGCTACTCAGAACTCGG  
TGCCATCAAATCATTACGGACA  
TTAAGAGCTTTAAGACCTCTAAGAGCCTTATCCCGGTTTGAAGGCATGAGGGTGGTT  
GTGAATGCTCTTGTTGGAGCAAT  
TCCCTCTATCATGAATGTGCTGTTGGTCTGTCTCATCTTCTGGTTGATCTTTAGCATC  
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MSLPALFNIGLLLFLVMFIYAIFGMSNFAYVKKEAGIDDMFNFETFGNSMICLFQITTSAG  
WDGLLAPILNSAPPDCDPD  
TIHPGSSVKGDCGNPSVGIFFFVSYIIISFLVVVNSYIAVILENFSVATEESAEPLEDDFEM  
FYEVWEKFDPDATQFIE  
FSKLSDFAAALDPPLLIAPNKVQLIAMDLPMVSGDRIHCLDILFAFTKRVLGESGEMDA  
LRIQMEDRFMASNPSKVSYE  
PITTLKRKQEEVSAIIQRNFRCYLLKQRLKNISSNYNKEAIKGRIDLPIKQDMIIDKLNG  
NSTPEKTDGSSSTTSPPS  
YDSVTKPDKEKFEKDKPEKESKGKEVRENQK.

Seq. Id. No. 67 (cont'd)

MAQALLVPPGPESFRLFTRESLAAIEKRAAEEKAKKPKKEQDNDDENKPKPNSDLEAGK  
NLPFIYGDIPPEMVSEPLEDL  
DPYYINKKTFIVMNKGKAISRFSATSALYILTPLNPVRKJAXKILVHSLFSMLIMCTILTNC  
VFMTLSNPPDWTKNVEYT  
FTGIYTFESLIKILARGFCLEDFTFLRDPWNWLD FSVIVMAYVTEFVSLGNVSALRTFRVL  
RALKTISVIPGLKTIVGAL  
IQSVKKLSDVMILTVFCLSVFALIGLQLFMGNLRNKCLQWPPSDSAFETNTTSYFNGTMD  
SNGTFVNVTMSTFNWKDYIG  
DDSHFYVLDGQKDPLLCGNGSDAGQCPEGYICVKAGRNPNGYTSFDTFSWAFLSLFRL  
MTQDYWENLYQLTLRAAGKTY  
MIFFVLVIFLGSFYLVNLILAVVAMAYEGQNQATLEEAQKEAEFQQMLEQLKKQEEA  
QAVAAASAASRDFSGIGGLGE  
LLESSSEASKLSSKSAKEWRNRRKKRRQREHLEGNNKGERDSFPKSESEDSVKRSSFLFS  
MDGNRLTSDKKFCSPHQSL  
SIRGSLFSPRRNSKTSIFSFRGRAKDVGSENFADDEHSTFEDSESRRDSLFPVPHRHGERR  
NSNGTTTETEVRRRLSSY  
QISMEMLEDSSGRQRAVSIASILTNTMEELEESRQKPPCWYRFANVFLIWDCCDWLK  
VKHLVNLIVMDPFVDLAITIC  
IVLNTLFMAMEHYPMTEQFSSVLTVGNLVFTGIFTAEMVLKIIAMDPYYYFQEGWNIFD  
GIIVSLSLMELGLSNVEGLSV  
LRSFRLLRVFKLAKSWPTLNMLIKIIGNSVGALGNLTLVLAIIVFIFAVVGMQLFGKSYKE  
CVCKINDDCTLPRWHMND  
FHSFLIVFRVLCGEWIETMWDCMEVAGQTMCLIVFMLVMVIGNLVVLNLFALLSSFS  
SDNLAATDDDNEMNNLQIAVG  
RMQKGIDYVKNKMRECFQKAFFRKPKEVIEHEGNKIDSCMSNNTGIEISKELNYLRDGN  
GTTSGVGTGSSVEKYVIDEND  
YMSFINNPSLTVTVPIAVGESDFENLNTEEFSSSESELEESKEKLNATSSSEGSTVDVVLPRE  
GEQAETEPEEDLKPEACF  
TEGCIKKFPFCQVSTEEGKGKIWWNLRKTCYSIVEHNWFETFIVFMILLSSGALAFEDIYI  
EQRKTIKTMLEYADKVFTY  
IFILEMLLKWVAYGFQTYFTNAWCWLDLIVDVSLVSLVANALGYSELGAIKSLRTLRA  
LRPLRALS RFEGMRVVVNALV  
GAIPSIMNVLLVCLIFWLIFSIMGVNLFAGKFYHCVNMTTGNMFDISDVNNLSDCQALG  
KQARWKNVKVNFDNVGAGYLA  
LLQVATFKGWMDIMYAAVDSRDVKLQPVYEENLYMYLYFVIFIFGSFFTLNLFIVIID  
NFNQQKKKFGGQDIFMTEEQ  
KKYYNAMKKLGSKKPQKPIPRPANKFQGMVFDVTRQVFDISIMILICLNMVTMMVET  
DDQGKYMTLVLSRINLVFIVLF  
TGEFVLKLVS LRHYFTIGWNIFDFVVVILSIVGMFLAEMIEKYFVSPTLFRVIRLARIGRI  
LRLIKGAKGIRTLLFALM



MSLPALFNIGLLLFLVMFIYAIFGMSNFAYVKKEAGIDDMFNFETFGNSMICLFQITTSAG  
WDGLLAPILNSAPPDCDPD  
TIHPGSSVKGDCGNPSVGIFFFVSYIIISFLVVVNSYIAVILENFSVATEESAEPLEDDFEM  
FYEVWEKFDPDATQFIE  
FSKLSDFAAALDPPLLIAPNKVQLIAMDLPMVSGDRIHCLDILFAFTKRVLGESGEMDA  
LRIQMEDRFMASNPSKVSYE  
PITTTLLKRKQEEVSAIIQRNFRCYLLKQRLKNISSNYNKEAIKGRIDLPIKQDMIIDKLNG  
NSTPEKTDGSSSTTSPPS  
YDSVTKPDKEKFEKDKPEKESKGKEVRENQK.

Seq. Id. No. 68 (cont'd)

aatgtatttttaattgatgataaacgtataaacatcatagttgtttgctctaaagtagatatgaaggtcagatgaa  
acaataacatacatctggattgagaaatatcttaataactgatggatttttttctttatgtattgtgtgcttca  
atatcctaataaataatattagctagggtcactgatgtatagaatcttttctacatttagatatttctgcaaatgttt  
taccagaaagcaacacaaaaatactatcagttagtatgtgtttacactgttctctaaggagtc aaattcctcacctgaa  
aataattcatcccagggaagagaaaaaggttttcaaaagacttagagcaggccacaagggagcttcgcaaaactctacacgt  
aaagggtaatgtaaacttaaacctatttttcaaacagtaatttatatacttttaatttttagtagtttatgtgtgaac  
aatcatgcaaaacaacaagtgataaaatttttaaaaaaatttagtgagatgcaataactgaatatgtaaaagggtctca  
tacaattttatatgttagtagataagttacatttttttagtgtgttggaatttttagctcacatcacctctctactgtca  
tcttggggcactttcatgactacccatgcttcatgcagggttactttccctcctgtgacagaggataatgggaatgttt  
ttcttggctcaattttgtgtgtgtccgccagtagatggcgtaccactttgagtgcgatcggccttttttcttctttt  
tttttctcctcaagctgttttctgatatatgttgggtACCATAGAGTGAATCTCAGAACAGGAAGCGGAGGC  
ATAAGCA  
GAGAGGATTCTGGAAAGGTCTCTTTGTTTTCTTATCCACAGAGAAAGAAAGAAAA  
AAATTGTAACATAATTTGTAAACCT  
CTGTGGTCAAAAAAAAAAAAAAAAAAAAAAGCTGAACAGCTGCAGAGGAAGACAC  
GTTATACCCTAACCATCTTGGATGC  
TGGGCTTTGTTATGCTGTAATTCATAAGGCTCTGTTTTATCAGgtaagctgacaaaacatttcattatc  
tgcaccataga  
acctagtaccagggtcattttccttactttaaaatcatcttcatgctgctatttttaaccagtggtgttaaatgtaaa  
ttacaggaaccaaaggcatcggttagtgtgtaaactgcttactatttctttatctttcaagaaaatagacgtgtctgg  
aaatggtgatttatggtagactaggtcatcaatggctctgtgtttttagatgcttatgattaattgtattcagaaaa  
aatattttttattatactta

[illegible]

71

exon 01c (formerly exon 00c)

gatatattaaattttatgtattttaataattataatgtgcataatcattaataatataatattccacaccaaggca  
 tcagtaagaattaatttttaagctctctaatgtgaatataaaattatgtaagaactctgtataataagctcacagag  
 tacaagaaaggagaggaaaaaagtaaaagagaactgcgaagaactatgagggatttccaacagcaaaattgtcattga  
 agccatgagaaactctactactaaattcttaatttctcagcctacccaatattgggcaaacctaatttcttctgcag  
 GGGAAAAGCTGAGAGTCTGGAAGTCTTCCGAGGACTTAGAGACAACAGT  
 ATGGGAATTTCAACGAGACGTTTT  
 TACTTTCTTTTGACCAAGATTCAAATTCTTTATTCCAGCCCTTGATAAGTAAATAAGA  
 AGgtaaaggactatttattgt  
 aaaaagttttcatgattttgtatggcaccttgtccatatcatctcagataaatcagaataattgtgaaaattactc  
 ggtgatttccacattagatattttaacctaattgtatttctaaacaaaaaccaaccaggagaatccaattaagtaaaa  
 tgtatgtattaataaattagctattcccatctggaaaaggcagccatttctgttgagggtgcctcaatgatactga  
 ggctgagacaggttagatgatacaggcataaccattagcagcagactcaataactaaccag

72

exon 02 (formerly exon 01)

acaaagttatgaaaaggcggggggcaggatgcagaataattaagcaattttattgacaaactthactggcattactcttt  
 tgcgtgaaagtatactatattttggcttacagtgcaaacagaatttttaaatgcttttaaaaaatggacaaaattata  
 gatattcttgagtttaataataatgtttatataatataactgtacattgtagaatggcctaatacaactaattaaca  
 ttaagtacagactttgatagatttatgaacttggcttattgagaatgaggttgatgatgtttcaagttcaaatg  
 ttagtgcagactactaaaagcatgacttaatttatagcttttaaaaagtactaaagaatgacattttggttgatgttct  
 tatgccaatcgcttcttcttaactctgtgcaatttttcttttattgcagGTAATTCGTATGCAAGAAGCTACACG  
 TAATTAAATGTGCAGGATGAAAAGATGGCACAGGCACTGTTGgTACCCCCAGGACCT  
 GAAAGCTTCCGCCtTTTTACTAG  
 AGAATCTCTTGCTGCTATCGAAAAACGTGCTGCAGAAGAGAAAAGCCAAGAAGCCCCA  
 AAAAGGAACAAGATAATGATGATG  
 AGAACAAACCAAGCCAAATAGTGACTTGGAAGCTGGAAAGAACCTTCCATTTATT  
 TATGGAGACATTCCCTCCAGAGATG  
 GTGTCAGAGCCCCTGGAGGACCTGGATCCCTACTATATCAATAAGAAAgtgagtattgatttta  
 gacttctaataaatct  
 ltaatgaaactcttaactgtaataacttttctgggccttatatacagcatcacaatttttcttctgttaagattttat  
 aatactcttactgtcacttattttatcacaataataaacaacatttataagaaatgaagtcaagagttggttac  
 agtcaggaaatatgaatagatgaatgatttctacaatttcacagtataattcagatagtcacaaa

73

exon 03 (formerly exon 02)

tgtaacyatatgttaatttaaacatcaacatgtttgtatgtatgatataactggtttaacaaaccagtttgaaca  
 aacaaattcyatttttaaaaaggctcctcatgtatgtaagctccttaataagcccatgtctaatttagtaattttactc  
 gtattttctgtttcagACTTTTATAGTAATGAATAAAGGAAAGGCAATTTCCCGATTTCAGTGCC  
 ACCTCTGCCTTGTATA  
 TTTTAACTCCACTAAACCCTGTTAGGAAAATTGCTABSAAGATTTTGGTACATTCatatac  
 cttttaatgtgaattgccta  
 aatgctatttctaacagttgatttttaagaaaatgtcagttatattttcaagtatctgtaaaatttcttgagattaatg  
 gtaacattgttagtttaattcatttatttgcatt

74

exon 04 (formerly exon 03)

gagtgccacaaaggccatcacaggcttgaagttcttattttatcattgttttaaaacaataatattaatttca  
 cagttttgcatcgataaactttttgtgttttggatcattataaatggccatggtaacctactaacatttattcct  
 taactataatctacTTTATTCAGCATGCTTATCATGTGCACTATTTTGACCAACTGTGTATTTA  
 TGACCTTGAGCAACCC  
 TCCTGACTGGACAAAGAATGTAGAgtaagtaggaataacttctgggaatgagaaatgcacactcaaattcttagcaatc  
 tccttggggtatagcctgacttatggtttccacttctgtctaagaaaagtttttcataatatgcagccggaaggga  
 ggtcttcggggagctatttctctacgaggaagtattttcccaaaaa

75

exon 05 (formerly exon 04)

aaaatttaccatttgyggctttccattacatttctatcagataactctgcgctagtaggtcaaactagatgattatccat  
 aagatacatgaaactatttctaaaacccaaatagtaaacagattagattcctaaagaatatatttcttctcagtt  
 taactctttgctcaggcttgaactaaactaaatgaatagatttttgtaaataagaagtaaggaacaatattttaatg  
 aattgaaaaaccacaaaaggataggatttgcctatgattgaaaacatttttaacagttcaagcaaaattgttaattt  
 ggcttggatgttttcttagGTACACATTCACCTGGAATCTATACCTTTGAGTCACTTATAAAAATC  
 TTGGCAAGAGGGTT  
 TTGCTTAGAAGATTTTACGTTTCTTCGTGATCCATGGAACCTGGCTGGATTTCAGTGTG  
 ATTGTGATGGCgtgagtaactt  
 tgaaaatttgataagcgaaggagtgaataatgcatagtacaacaaggcttctgtgcatatattaaatgtagagct  
 ttctgttagtcaagtaactatatgggtgtgtatttccagaatacatattagaatacatattgcaatgtaaatatc  
 cagtaaatgatcaataaatggggttatcttcatgtcatatagcttttcttctcaaaaaat

76

exon 06N (formerly exon 05N)

atttgtaaactcacagggtctatgtgccaaaccagcattaagtccttatttagtataaactttgccaaaactatcag  
 taactctgatttaattctgcagGTATGTAAACAGAATTTGTAAGCCTAGGCAATGTTTCAGCCCTTCG  
 AACTTTCAGAGTC  
 TTGAGAGCTCTGAAAACCTATTTCTGTAATCCCAAGgtaagaagaactgggtgaaggtagtagggcccttata  
 tctccaac  
 ttttctgtgtgtattgtgtgtgtgtgaactcccctattacag

77

exon 06A (formerly exon 05A)

gtaagaagaaactgggtgaaggtagtagggcccttatatctccaactttcttgtgtgtattgtgtgtgtgaact  
 cccctattacagATATGTGACAGAGTTTGTGGACCTGGGCAATGTCTCAGCGTTGAGAACAT  
 TCAGAGTTCTCCGAGCAC  
 TGAAAACAATTTTCAGTCATTCCAGgtgagagctaggttaaacaccgaggttgactttaattattgagttgaaatcaatt  
 tatatgacttacagcattagccttgtgtgtattattacagttcatcccggttaataatgcaaatgatgtttcaatgtc  
 agtttagctcctaaaattttataaattacatgcgtatttataaagtcagcctttgagtttaacagaaaattgcatgagac  
 atcttcaaaaaatgctaatttgggcctcttgcgctctctctctcttttccactaccatggctttactaacagatttgg  
 atttaccattcgctgcagatgtagttcaaaaatg

78

exon 07 (formerly exon 06)

aaacttctgactagatatttaaacctcatattgaattccagcaagcacactgttcatgtgtaaatctgctgttcat  
 ctatttcccaaatcatcaggctatccatacagctttgggtgtctaaatagtcagcaatcatttatgggggaaagagaatg  
 tgtgtgactattaagaatcatgatttctggcactcttctcaggtaacctatagttctctctgcagGTTTAAAGACC  
 ATTGTGGGGGCCCTGATCCAGTCGGTAAAGAAGCTTTCTGATGTGATGATCCTGACT  
 GTGTTCTGTCTGAGCGTGTTC  
 TCTCATTGGGCTGCAGCTGTTTCATGGGCAATCTGAGGAATAAATGTTTGCAGTGGCC  
 CCAAGCGATTCTGCTTTTAAA  
 CCAACACCACTTCCTACTTTAATGGCACAATGGATTCAAATGGGACATTTGTTAATG  
 TAACAATGAGCACATTTAACTGG  
 AAGGATAACATTGGAGATGACAgtagaagtattacattatgttaacctagtgttgctgaatgaatttcaactataaa  
 tagt

79

exon 08 (formerly exon 07)

tgagactgtgggtgtacagccacctttgtaataactgaatagtcgaactctgatttactaataactaatgtgaata  
 ggattaatatgaataaaatgggtttttttgtattaacagGTCACTTTTATGTTTTGGATGGGCCAAAAAGACC  
 CTTTA  
 CTCTGTGGAAATGGTTCAGATGCAGGgtaagaacataatatattttaagatatagaactctttgcgaaaaaaaaa  
 gtaggtaggaaaacaactacatgggtatgtgtagccttaccatgtatgcaataaagagcagtgtgtctccctaggaa  
 gtgccttgtctgccttaccggattgccactggctcctaaactcacagcaattaaaaattatcccttgaagaccttcc  
 ccaaaattcacagttaagatgttcttaattgatgtcctcaatgtgtgaaggccagagtctgtcttgcgtacatcta  
 tcagagctgttaggaaa

80

exon 09 (formerly exon 08)

aaagagtaaaaataggtgaagtcagagccaaaagtgtgtggtgctagcttctgccattctaaatgtctrwaaawatt  
 tatttgcactaaatttctatcggtcttcctagtgaatttcactgtataagttcacggtgggcaatcacctaaagtgt  
 tctggaaattaaagcaagataattcgtcacagatagcagctttgggtttgaaaattcctataagtcaataaattgaaa  
 ttgctgtaatttctaaactgacctacctcatttctctctttagCCAGTGTCCAGAAGGATACATCTGTGTGAAGG  
 CTGGTCGAAACCCCAACTATGGCTACACAAGCTTTGACACCTTTAGCTGGGCTTTCC  
 TGTCTCTATTTGCACTCATGACT  
 CAAGACTACTGGGAAAATCTTTACCAGTTGgtaaggccaaatgagcatgcataacatttattttatagacatgtatga  
 aatgaaaagcataggctgagt

81

exon 10 (formerly exon 09)

agctaattagtctactgactatctaactgtggaatcagatatttattggggacattataactaaaactgatggaatt  
 atccccatttcccctagACATTACGTGCTGCTGGGAAAACATACATGATATTTTTTGTCTCTGGT  
 CATTTTCTTGGGCTC  
 ATTTTATTTGGTGAATTTGATCCTGGCTGTGGTGGCCATGGCCTATGAGGGGCAGAA  
 TCAGGCCACCTTGGAAGAAGCAG  
 AACAAAAAGAGGCCGAATTCAGCAGATGCTCGAACAGCTTAAAAAGCAACAGGAA  
 GAAGCTCAGgtactgagtataaa  
 mgcaaagatttatcattatttmttagtttctaagtagaaatagtggtatactatagaggtagattggaactgcttt  
 tcattttatatatmggcattgtcattagacac

82

exon 11 (formerly exon 10a)

tgcaaactgttttcaaagctctgtgttctaataagtgccctggctttgtttatgacagGCAGTTGCGGCAGCATCAGCTG  
 CTTCAAGAGATTTTCAGTGGAATAGGTGGGTTAGGAGAGCTGTTGGAAAGTTCTTCAG  
 AAGCATCAAAGTTGAGTTCCAAA  
 AGTGCTAAAGAATGGAGGAACCGAAGGAAGAAAAGAAGACAGAGAGAGCACCTTG  
 AAGGAAACAACAAAGGAGAGAGAGA  
 CAGCTTTCCCAAATCCGAATCTGAAGACAGCGTCAAAGAAGCAGCTTCCTTTTCTC  
 CATGGATGGAAACAGACTGACCA  
 GTGACAAAAAATTCTGCTCCCCTCATCAGgtatgatttttactaagtgtctgtgttcttctgtcattgtctattgctttt  
 tagttttgtattttgtttgtacactttgtactatctgtacttcagttgagggacaggaactaacatttaatatag  
 ttgtttaa

83

exon 12 (formerly exon 10b)

gtgaagactaaatgaagtgggtgtatacttagtaaatgcaaatcagtattgttagtcagaaaaacactcittgtactta  
 aatttgctttaataaaaaatataataatgtgtcctctataaatttgattatccatgtttaagggaagagtatacta  
 actccaaagaaaacagatcccttaataataatttataaataattgcgttcttccccatccccatccattccttc  
 ctttttgctttctctgcagTCTCTCTTGAGTATCCGTGGCTCCCTGTTTTCCCCAAGACGCAATAG  
 CAAAACAAGCATT  
 TCAGTTTCAGAGGTCGGGCAAAGGATGTTGGATCTGAAAATGACTTTGCTGATGATG  
 AACACAGCACATTTGAAGACAGC  
 GAAAGCAGGAGAGACTCACTGTTTGTGCCGCACAGACATGGAGAGCGACGCAACAG  
 TAACgttagtcaggccagtatgtc  
 atccaggatggtgccagggttccagcaaatgggaagatgcacagcactgtggattgcaatgggtgtgttcccttggtg  
 ggtggaccttcagctctaacgtcacctactgggcaacttcccagaggtgataatagatgacctagctgtactgacatt  
 attcaccaatttg

84  
 exon 13 (formerly exon 10c)

gaattctcttaaagggtactacctgtgatacttttttaaaaaaaactgtttataacttagcaataattcaatattttat  
 tcttgaaattcttacctggaaaattgcatgtagcatgatttgcaaagaaatgctatgtggtgtgtattactattggga  
 agagtgggttgagccatcagatttggttgcagGGCACCACCACTGAAACGGAAGTCAGAAAGAGAAGG  
 TTAAGCTCTT  
 ACCAGATTTCAATGGAGATGCTGGAGGATTCCTCTGGAAGGCAAAGAGCCGTGAGC  
 ATAGCCAGCATTCTGACCAACACA  
 ATGGAAAGtaagagcaggtcatggaacagccaactttctgtgattatgtgcttgtgaactattccttctttcatagaa  
 ttactgaagctgttaccagatcgaaatatattagacctagaatgtgatatatgggtacattatcacattgntta  
 caaaactaatattggccttattcttttgacttgggtccttaccttacttgcagagtatattcaacacttgatattat  
 atcaat

85  
 exon 14 (formerly exon 11)

tagtcattttaaaagcaaaatattaaattcaaagtgcttatttctgtattcaaaagagaaaaagtcgatctatatgac  
 attttaattaacatttctgaaaatatttaattgggattgtcttctcaagtttcttaagtaatatgaacttctattttcaa  
 atataagcatcaattttgttaaataatgaaaatctactagcaataataactcattttgtgttatttactactcttcc  
 ttgtattgtccctccagAACTTGAAGAATCTAGACAGAAATGTCCGCCATGCTGGTATAGATT  
 GCCAATGTGTTCTTG  
 ATCTGGGACTGCTGTGATGCATGGTTAAAAGTAAAACATCTTGTGAATTTAATTGTT  
 ATGGATCCATTGTGTTGATCTTGC  
 CATCACTATTTGCATTGTCTTAAATACCCTCTTTATGGCCATGGAGCACTACCCCATG  
 ACTGAGCAATTCAGTAGTGTGT  
 TGA CTGTAGGAAACCTGgtaagtacattgaagtttacttatttcttggtagatgtgggagagatagaccaaagggaa  
 agatgtatttgtgctgtgtgaacccaaaaattatctcttctctcatagaaagaaatctaaaggaattacaggg  
 aatctcagagatacagccataaactcaactggatgaatgctgattgtttaggccaatgtctgtgctgattgatcatggt  
 gtcttaccagttgtaaacgtctcaaat

86  
 exon 15 (formerly exon 12)

ctaagactgaattgatttgcactattctctactttaaatatttagatattttattcctgtctaattgttcttcttat  
 aaattcgtgtagcatcagtggtttcagtgctcttgatagtagtgctgatctctaatttttagGTCTTTACTGGGATTTT  
 TACAGCAGAAATGGTTCTCAAGATCATTGCCATGGATCCTTATTACTATTCCAAGAA  
 GGCTGGAATATCTTTGATGGAA  
 TTATTGTGAGCCTCAGTTTAATGGAGCTTGGTCTGTCAAATGTGGAGGGATTGTCTGT  
 ACTGCGATCATTACAGACTGgta  
 tctatttatatatccctgtcgtcattggcacaacatttatttgaaattgaatcaatgtatatttatataattatta  
 • attttaatttttaatttacatcaatatgtgacattctaagaaaacatgtaaacatccyctttaagctaaaccattttct  
 aagaatgatgaaagcattcaaaatactctataatgattaggtatgtagggcacattagaaaacctacaagtactttctaa  
 aactgtgttttaagtttatgaagctttttggccttacagtcgttaaagatacgcaataaaaaatttagaccccggttaa  
 ttttagctttttatataaccctact

87  
exon 16 (formerly exon 13)

tatttttattttgcacttaaatgatattatgaccagatttacaattctaattgttaacactatttttctggatttg  
aaattgaatcagttcagatattttgagttttacatctaccacgtgtggttctatgataccacataactaataaaataat  
gtctaaaattatattatgattactactaacagcatctttcacttgattacagCTTAGAGTTTTCAAGTTGGCAAAATCC  
TGGCCACACTAAATATGCTAATTAAGATCATTGGCAATTCTGTGGGGGCTCTAGGA  
AACCTCACCTTGGTGTGGCCAT  
CATCGTCTTCATTTTTGCTGTGGTCGGCATGCAGCTCTTTGGTAAGAGCTACAAAGA  
ATGTGTCTGCAAGATCAATGATG  
ACTGTACGCTCCCACGGTGGCACATGAACGACTTCTTCCACTCCTTCCTGATTGTGTT  
CCGCGTGCTGTGTGGAGAGTGG  
ATAGAGACCATGTGGGACTGTATGGAGGTCGCTGGCCAAACCATGTGCCTTATTGTT  
TTCATGTTGGTCATGGTCATTGG  
AAACCTTGTGgtatgtatgtatgacaaatgctcataaattagaacaagagcagacagtagctaggaacgtggccagatgt  
agtaaacatatctctggtttatagtaagtggcctagactgaaatccccctattagcactcagagaataagcaagttattt  
aacttctcctgggctctggtttccattt

86  
exon 17 (formerly exon 14)

ccttagagcaggatattaggtcctttaagagtggtgacttagacatggcatctgaaatataagcattcaataaac  
atttgtgaataatttttagcaaagatctatgagttcccttttaggctgttattaaatgcatatttcaatattaarat  
aggcattttcttttttttttagGTTCTGAACCTCTTTCTGGCCTTATTGTTGAGTTCATTTAGCTCA  
GACAACCTTG  
CTGCTACTGATGATGACAATGAAATGAATAATCTGCAGATTGCAGTAGGAAGAATG  
CAAAAGGGAATTGATTATGTGAAA  
AATAAGATGCGGGAGTGTTCCTCAAAAAGCCTTTTTTAGAAAGCCAAAAGTTATAGA  
AATCCATGAAGGCAATAAGATAGA  
CAGCTGCATGTCCAATAATACTGGAATTGAAATAAGCAAAGAGCTTAATTATCTTAG  
AGATGGGAATGGAACCACCAGTG  
GTGTAGGTACTGGAAGCAGTGTTGAAAAATACGTAATCGATGAAAATGATTATATGT  
CATTCATAAACAACCCAGCCTC  
ACCGTCACAGTGCCAATTGCTGTTGGAGAGTCTGACTTTGAAAACCTTAAATACTGAA  
GAGTTCAGCAGTGAGTCAGAACT  
AGAAGAAAGCAAGGAGgtaaggaatgctttaaatTTTTgtccatttccctatgataacctgtactacagttatttac  
tattttcattgtgcttatatgcattatcgaaxaagcaatgattgtaagt

84  
exon 18 (formerly exon 15)

taattatttagtacataatgatcagtaagtctaagagttaaatgctatcactacatTTTTTcacacaatgacacagt  
atttcccagttagttaaataaaagggggaaaatcacatctttgaaatgggattttgttccagAAATTAAATGCAACCAG  
CTCATCTGAAGGAAGCACAGTTGATGTTGTTCTACCCCGAGAAGGTGAACAAGCTG  
AAACTGAACCCGAAGAAGACCTTA  
AACCGGAAGCTTGTTTTACTGAAGgtaacaagctctgatgtgattaaatacaatctccccgttctttacggagactg  
aatatgcctcatttaaaaaaaaaaatttagcaaacgaggtgtggtgcttatgcctgtaaccccaaaatttgggaggct  
acggtaggaggattgcttgacccaggagtttgagaccacctgggaaatgtagtaaggctttgcctctac



<sup>90</sup>  
exon 19 (formerly exon 16)

gaattctaagtagctggctgagatataagctcgagaataattcattatacaggagggatgctgacgataactaggaat  
gaaggagatggttaccctatgaaatgattacctggaagtggagtgagggaagggcaagaaagttatttttctattta  
agattaaaatataatttttaactatatttsatttttagGATGTATTAAAAAGTTCCATTCTGTCAAGTAAGT  
ACA  
GAAGAAGGCCAAAGGGAAGATCTGGTGGAATCTTCGAAAAACCTGCTACAGTATTGT  
TGAGCACAACTGGTTTGAGACTTT  
CATTGTGTTTCATGATCCTTCTCAGTAGTGGTGCATTGgtaagtgaatgcatattggcaagaatcagattct  
ggtgaaat  
agtttattctccaaaattaccagatgcaaactgagcttcagaatcaaagaaaaggcatatctgtgtcttgagagct  
tggcaccgaaggttaacgatgcaaaattcagttctgaacaaatcagcaccatgaaacagccagatggaatttctcatct  
gggtttatctaacagatgttttctcactgagacaaccatttgcagagacattctgtaacca

<sup>91</sup>  
exon 20 (formerly exon 17)

ctagttagtcttttagattgtctcatgttcaatgtttatgtaaaatatcaataatcaaaattattctttgtactcacta  
ttatactaagcaatttttcaaatatttagaagaagcaagccatttaagtaaaataaaatattttgattcatagGCCTT  
TGAAGATATATACATTGAACAGCGAAAGACTATCAAAACCATGCTAGAAATATGCTG  
ACAAAGTCTTTACCTATATATTCA  
TTCTGGAAATGCTTCTCAAATGGGTTGCTTATGGATTTCAAACATATTTCACTAATGC  
CTGGTGCTGGCTAGATTTCTTG  
ATCGTTGATgtaagtattttaagtgattttataaaattgttttaaaaggaggaagttgacattcatatgtttctgt  
tattaaaactttcactaataatgacataattatgcagttatttaacaaaactgtaacatatgcaacaatgaggaatc  
tcatgggaaagagtagaggaggtcctaaacatgggcagtg

<sup>92</sup>  
exon 21 (formerly exon 18)

ctaactaataatttaagcacacatccatgaaggatctggcattgaactcaatcctgaattatcagtggtatatgcacaag  
ttgaaaaggggtccatgggtataaaatcttaactggagatattgacacgtgttgataaatatgggcaagtattctggtt  
cattgggttaaaaaaagcaatagtagatgagactggcaatataagatgaccccaactatgtggaagatgaaagttgcc  
aaggtagtccaaattagtagtttagtctgcattaaatagataccacacctataccttcagtcacagttatttctgg  
tgaactaattaatttttttcttttagGTTTCTTTGGTTAGCCTGGTAGCCAATGCTCTTGGCTACTCA  
GAACTCG  
GTGCCATCAAATCATTACGGACATTAAGAGCTTTAAGACCTCTAAGAGCCTTATCCC  
GGTTTGAAGGCATGAGGgtaaga  
agaatagacactctaattattcatgtcaaaaattacatgtaggtaatgatttagatagaaaagggtgccatacttctg  
atatttattcaatagaaattacagaattagaagc

93

exon 22 (formerly exon 19)

ccagcatacaacattttctgactccatcttactataaccagggttttaataatgattcttttcatactgtagcatattttgc  
 ttctctaaaaccttagctcttttagtgtgtcattgtttgttttcccttcaaataatgtgctagaaaaattagaagaaacaa  
 ctgtccacctagatttttatttaactcttttcaagcacatattaataactaaacaataacattgaaggaaatgggttccat  
 tcaaaagggttgtaagctatgttcccctcgctgtctcttctagGTGGTTGTGAATGCTCTTGTTGGAGCAATTCCC  
 TCTA  
 TCATGAATGTGCTGTTGGTCTGTCTCATCTTCTGGTTGATCTTTAGCATCATGGGTGT  
 GAATTTGTTTGCTGGCAAGTTC  
 TACCACTGTGTAAACATGACAACGGGTAACATGTTTGACATTAGTGATGTAAACAAT  
 TTGAGTGACTGTCAGGCTCTTGG  
 CAAGCAAGCTCGGTGGAAAAACGTGAAAGTAACTTTGATAATGTTGGCGCTGGCT  
 ATCTTGCACTGCTTCAAGTGtaa  
 gtggctactgtacaggtttgaaaaagtttcaagatgtttcaaggaagattattccctgatgttctcgtttgaatga  
 ctaacatttgacagcatgaaaaaagttaatgataaacctataataatcagcttgaattgatcataaaaaagatgttaca  
 attttttataatgtattttccttagtgtaagcttttagtatgttttaattgattttatatttt

94

exon 23 (formerly exon 20)

aaaggaacaagtccagactttaatacaaatgttttctatttcaattttatttcaatctcttgatatgaatttcac  
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 TGATTCACGAG  
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 tccaaaattctatattagaacatttaatttgcataataaaaaatgaacagctcgttcaatatagatgatgcttgattaa  
 tgtgtgcctaataatacaaatatgtagctaatatgaaacg

95

exon 24 (formerly exon 21)

gtaaggcacaatgggaaaagagaatcaagaacaatcataaaacttgcaaaccttcattttactagatcatactagtttta  
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 acccaaaaatgtgtccactccttcggaccatccaacgggtctccagtgttttagcttggttacagagccttcag

96

exon 25 (formerly exon 22)

acccttgtgcctacttttaacatagataatacaaataggatcctgtagcgatcagagtttatgtacgtaaggattt  
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 ATGCAATGAAGAACTTG  
 GATCCAAGAAACCTCAGAAACCCATACCTCGCCCAGCAgtaagaattacttgcctcttaattgttccaaa  
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97

exon 26 (formerly exon 23)

tatataaccaaataatgctttgttagctatataaattttttccattttttaacatgaagagaaaaaagcacaca  
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 tctttatgaatatatagtaaccttatttctctctcacttcttagAACAAATTCCAAGGAATGGTCTTTGATTTT  
 GTAACCAGACAAGTCTTTGATATCAGCATCATGATCCTCATCTGCCTCAACATGGTC  
 ACCATGATGGTGGAAACGGATGA  
 CCAGGGCAAATACATGACCCTAGTTTTGTCCCGGATCAACCTAGTGTTCAATTGTTCT  
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98

exon 27 (formerly exon 24)

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 GTCCCTTCCTGCGTTGTTTAAACA  
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Seq. Id. No. 98 (cont'd)

## Annex 2

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